SHARP OPTONICA

SERVICE MANUAL

SM-7100H
SM-7100HB

(PHOTO: SM-7100H)

STEREO AMPLIFIER

MODEL
SM-7100H
(Silver Panel)

SM-7100HB
(Brown Panel)

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified by used.

INDEX TO CONTENTS

1. SPECIFICATIONS 2
2. LAYOUT OF FRONT & REAR PARTS 3
3. DISASSEMBLY 4
4. AC MAINS VOLTAGE 4
5. BLOCK DIAGRAM 5, 6
6. CIRCUIT DESCRIPTION 7, 8, 9, 10, 11, 12
   - EQUALIZER CIRCUIT 7
   - TONE CONTROL CIRCUIT 8
   - POWER AMPLIFIER 9
   - PROTECTION CIRCUIT (RELAY CIRCUIT) 10
   - OUTPUT POWER INDICATOR CIRCUIT 11
   - POWER SUPPLY CIRCUIT 11, 12
7. ADJUSTMENT OF POWER AMPLIFIER AND OUTPUT POWER INDICATOR 13
8. HYBRID INTEGRATED CIRCUIT REPLACEMENT 14
9. EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT 15, 16
10. VOLTAGE REGULATOR TRANSISTOR REPLACEMENT 17
11. NOTES ON SCHEMATIC DIAGRAM 18
12. SCHEMATIC DIAGRAM 19, 20
13. WIRING SIDE OF PRINTED WIRING BOARD 21, 22, 23, 24
14. VOLTAGES ON PRINTED WIRING BOARD 25, 26, 27, 28
15. TRANSISTORS TYPE 29
16. DIODES TYPE 30
17. MISCELLANEOUS PARTS GUIDE 31, 32
18. REPLACEMENT PARTS LIST 33, 34, 35, 36, 37, 38
19. MAINS SUPPLY CORD WIRING CONNECTIONS 39

SHARP CORPORATION OSAKA, JAPAN

SPECIFICATIONS

GENERAL DESCRIPTION

Power source:	A.C. 110/220/240 V, 50/60 Hz
Power consumption:	500 W
Semiconductors:	5-ICs (Integrated Circuit) 45-Transistors 14-FETs (Field Effect Transistor) 24-Diodes (3-Zener Diodes) 17-LEDs (Light Emitting Diode)
Circuit:	Power amplifier; Symmetrically balanced D.C. amplifier, complementary final stage Equalizer; ICL (Input Capacitor-less), FET differential amplifier, complementary final stage, dual power supply Tone control; ICL (Input Capacitor-less), FET differential amplifier, dual power supply
Dimensions:	Width; 430 mm (16-15/16 inch) Height; 75 mm (2-31/32 inch) Depth; 382 mm (15-1/16 inch)
Weight:	10.8 kg (23.8 lbs.)

POWER AMPLIFIER

Continuous power output (at 1 kHz):	2 x 70 W/4 ohms, Both channels driven, 0.005% distortion 2 x 60 W/8 ohms, Both channels driven, 0.005% distortion
Continuous power output (20 Hz – 20 kHz):	2 x 65 W/4 ohms, Both channels driven, 0.03% distortion 2 x 60 W/8 ohms, Both channels driven, 0.03% distortion
Intermodulation:	0.02% at rated power 0.01% at 35 W output
Damping factor:	more than 70 (at 1 kHz, 8 ohms)
Power bandwidth:	5 Hz to 40 kHz, at 0.05% distortion
Frequency response:	D.C. to 80 kHz +0 dB –1.5 dB
Input sensitivity and input impedance:	830 mV/10k ohms

PRE-AMPLIFIER

Input sensitivity and input impedance:	PHONO 1 and 2; 2.8 mV/47k ohms AUX; 150 mV/47k ohms TUNER; 150 mV/47k ohms TAPE PB 1 and 2; 150 mV/47k ohms TAPE PB (DIN socket); 150 mV/47k ohms
Allowable maximum input for equalizer:	300 mV (RMS, 1 kHz)
RIAA curve deviation:	±0.3 dB (20 Hz to 20 kHz)
Frequency response:	7 Hz to 70 kHz +0 dB (TUNER, AUX, –3 dB TAPE PB)
Tone control:	Bass; ±10 dB at 100 Hz Treble; ±9 dB at 10 kHz
Low filter:	–3 dB at 15 Hz, 6 dB/octave –3 dB at 30 Hz, 6 dB/octave
High filter:	–3 dB at 8 kHz, 6 dB/octave –3 dB at 15 kHz, 6 dB/octave
Loudness contour:	+6 dB at 100 Hz +3 dB at 10 kHz
Audio muting:	–20 dB
Signal to noise ratio: (using IHF "A" network)	PHONO; 80 dB AUX or TUNER; 95 dB
Output level and loaded impedance:	REC 1 and 2; 150 mV/47k ohms REC (DIN socket); 30 mV/82k ohms

Specifications of this model are subject to change without prior notice.

LAYOUT OF FRONT & REAR PARTS (Figure 3–1 and Figure 3–2)

1. Power On/Off switch knob (JKNBM0297AFSA) (SM-7100H) (JKNBM0297AFSB) (SM-7100HB)
2. Power/protection indicator, D901 (VHPGL-52RG/1F)
3. Headphones jack, J901 (QJAKJ0070AFZZ)
4. Speakers selector knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
5. Subsonic filter knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
6. High filter knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
7. Mono switch knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
8. Tape dubbing selector knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
9. Tape monitor selector knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
10. Tone control circuit on/off knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
11. Loudness contour knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
12. Audio muting knob (JKNBM0298AFSA) (SM-7100H) (JKNBM0298AFSB) (SM-7100HB)
13. Bass control knob (JKNBN0404AFSA) (SM-7100H) (JKNBN0404AFSB) (SM-7100HB)
14. Treble control knob (JKNBN0404AFSA) (SM-7100H) (JKNBN0404AFSB) (SM-7100HB)
15. Function selector knob (JKNBN0404AFSA) (SM-7100H) (JKNBN0404AFSB) (SM-7100HB)
16. Balance control knob (JKNBN0404AFSA) (SM-7100H) (JKNBN0404AFSB) (SM-7100HB)
17. Volume control knob (JKNBN0403AFSA) (SM-7100H) (JKNBN0403AFSB) (SM-7100HB)
18. Output power indicator, D609 & D610 (VHPGL112N31-1)
19. Switch indicator, D701 – D714 (VHPGL-9NG12-1)
20. Earth terminal, TE903 (QTANN0153AFZZ)
21. Phono 1 input jacks (QSOCZ2472AFZZ)
22. Phono 2 input jacks (QSOCZ2472AFZZ)
23. Tuner input jacks (QSOCJ2667AFZZ)
24. Auxiliary input jacks (QSOCJ2667AFZZ)
25. Tape 1 input jacks (QSOCJ2667AFZZ)
26. Tape 1 output jacks (QSOCJ2667AFZZ)
27. Tape 2 input jacks (QSOCJ2667AFZZ)
28. Tape 2 output jacks (QSOCJ2667AFZZ)
29. Tape 2 record/playback socket (QSOCD2553AFZZ)
30. Output of pre-amplifier jacks (QSOCJ2459AFZZ)
31. Input for power amplifier jacks (QSOCJ2459AFZZ)
32. Speaker A terminals (QTANZ0455AFZZ)
33. Speaker B terminals (QTANZ0455AFZZ)
34. Mains voltage selector (QSOCE0559AFZZ)
35. Fuse holder (QFSHP1001AGZZ)

(PHOTO: SM-7100H)

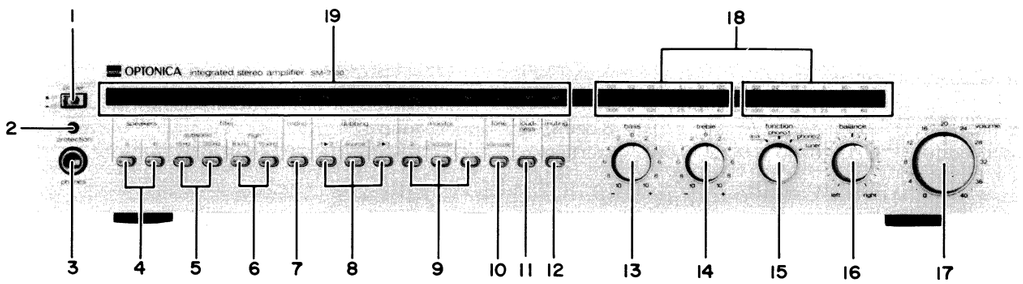


Figure 3–1

(PHOTO: SM-7100H)

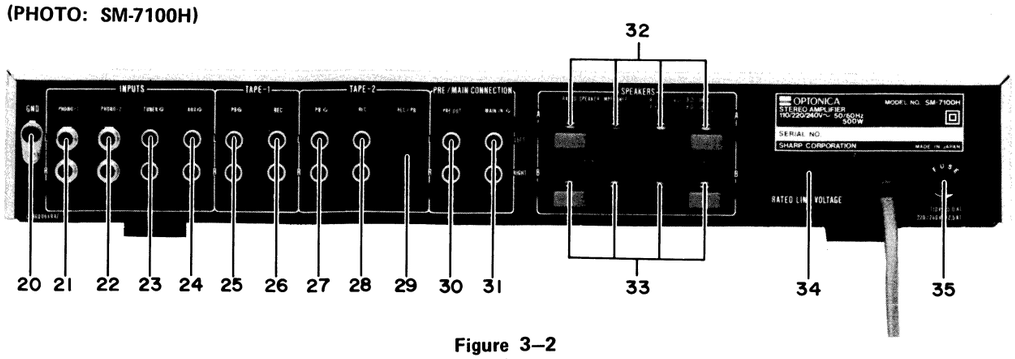


Figure 3–2

DISASSEMBLY

Prior to removing the chassis, be sure to draw the mains supply cord from a wall outlet. Then, proceed with the removal work in the following order after disconnecting all of the connection cords at the rear of the set.

1) To remove the cabinet: (See Figure 4–1)
   Remove 4 screws retaining the cabinet (2 screws each for the right and left sides), then the cabinet can be detached.
2) To remove the bottom lid: (See Figure 4–2)
   Turn over the set and remove 9 screws retaining the bottom lid, then the bottom lid can be detached.
3) To remove the front panel: (See Figure 4–2 and 4–3)
   1. Pull out the 5 knobs.
   2. Remove the 5 screws and push rivet retaining the front panel, then the front panel can be detached.

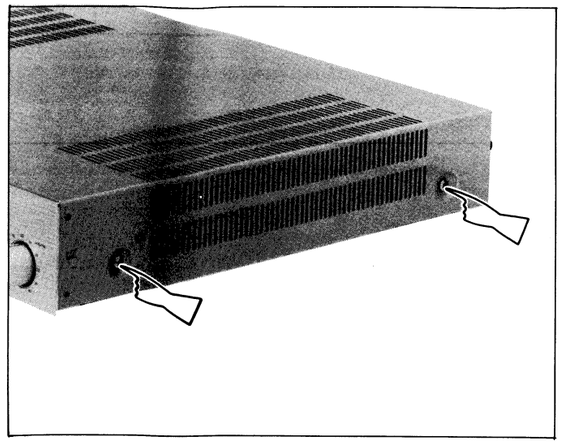


Figure 4–1

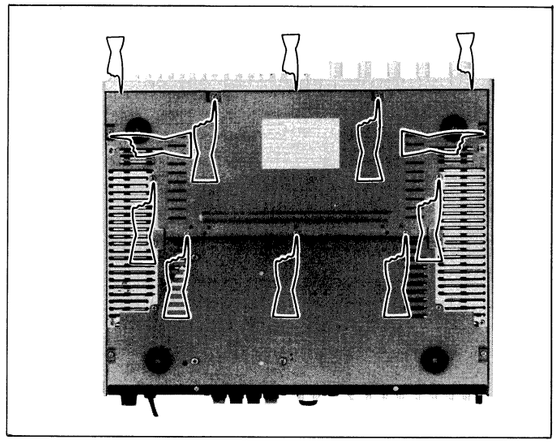


Figure 4–2

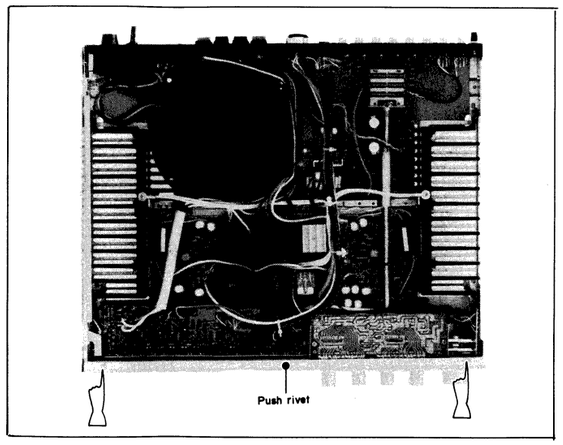


Figure 4–3

AC MAINS VOLTAGE

Check the preset AC mains voltage before plugging the mains supply lead to a mains outlet. If the setting is different from that of your local mains supply voltage, the voltage selector must be re-set as follows. Rotate the voltage selector by using a screwdriver so that your local voltage number can be seen in the window.

When the AC mains voltage is to be set at 110V use a fuse of T6.3A. In other voltages 220V or 240V use a fuse of T4.0A.

1. Disconnect the AC cord plug from the wall outlet in order to prevent an electric shock.
2. Remove the fuse holder by turning it counterclockwise.
3. Replace the fuse with another one.
4. Replace the fuse holder to its original position.

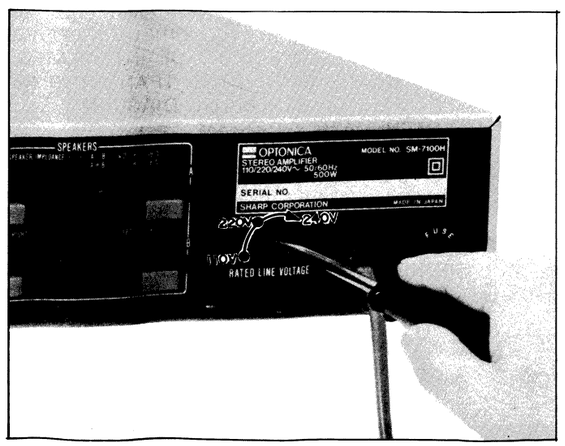


Figure 4–4

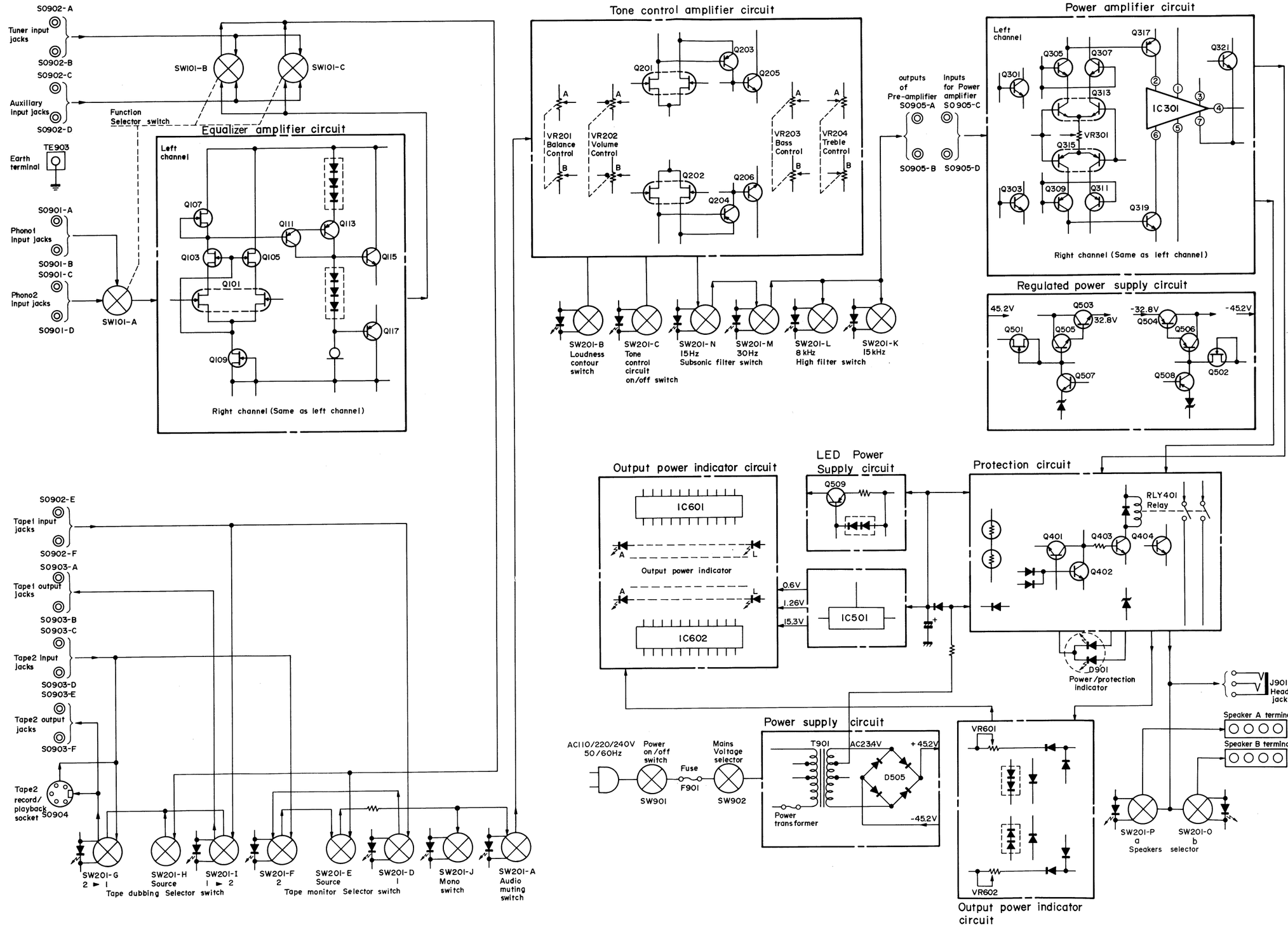


Figure 5 BLOCK DIAGRAM

CIRCUIT DESCRIPTION

EQUALIZER CIRCUIT

This equalizer circuit employs low noise high gain dual FET in the initial stage differential amplifier, to improve signal to noise ratio. Newly developed regulated current diode is employed as the regulated current load to get enough gain.

Coming out of Phono 1 input jacks (SO901A, B) or Phono 2 input jacks (SO901C, D), signal is applied via the function selector switch (SW101A) and resistor (R101 or R102) to the differential amplifier formed by FET (Q101 or Q102), where it is amplified: besides the amplification, this differential amplifier serves to make DC potential at the output section be kept to 0V.

The signal thus output from the differential amplifier is further amplified by the common-gate amplifier made of FETs (Q103 and Q105, or Q104 and Q106). FET (Q107 or Q108) operates as the regulated current load, and FET (Q109 or Q110) operates as the regulated current circuit on the other hand.

Coming from the drain of FET (Q103 or Q104), signals are amplified by Darlington common-emitter amplifier being composed of transistors (Q111 and Q113, or Q112 and Q114) and SEPP (Single Ended Push-Pull) amplifier being composed of transistors (Q115 and Q117, or Q116 and Q118), and enter into function selector switch (SW101B, C) through resistor (R113 or R114), coupling capacitor (C113 or C114) and resistor (R117 or R118).

The regulated current diode (D105 or D106) is the regulated current load in Darlington common-emitter amplifier which is composed of transistors (Q111 and Q113, or Q112 and Q114).

NF circuit aimed at obtaining RIAA equalizer curve characteristic is composed of such high-precision parts as resistors (R119, R121, R123 and R125, or R120, R122, R124 and R126) and capacitors (C117, C119 and C121, or C118, C120 and C122).

The resistor (R107 or R108) is to deside feedback amount and besides determine the gain of equalizer amplifier in terms of the impedance ratio against RIAA equalizer element.

The capacitor (C111 or C112) is time constant with respect to the resistor (R107 or R108), which determines the feedback amount about low-frequency band.

The capacitors (C101, C103 and C105, or C102, C104 and C106) are for prevention of external noises.

Directly connection circuit of capacitor (C109 or C110), resistor (R105 or R106) and capacitor (C107 or C108) is for preventing the oscillation.

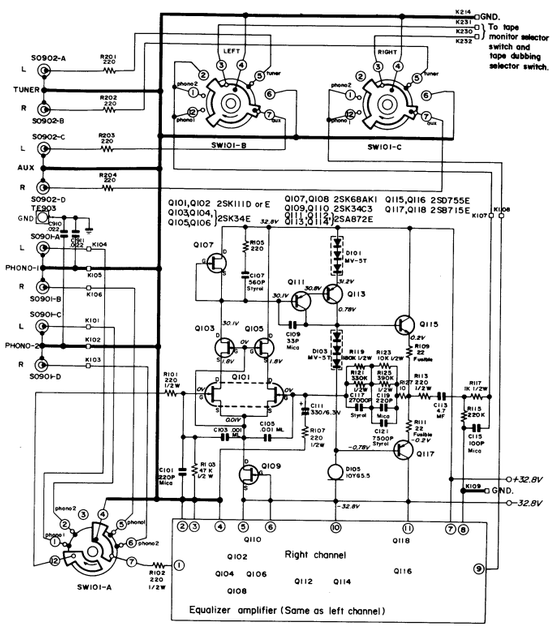


Figure 7–1

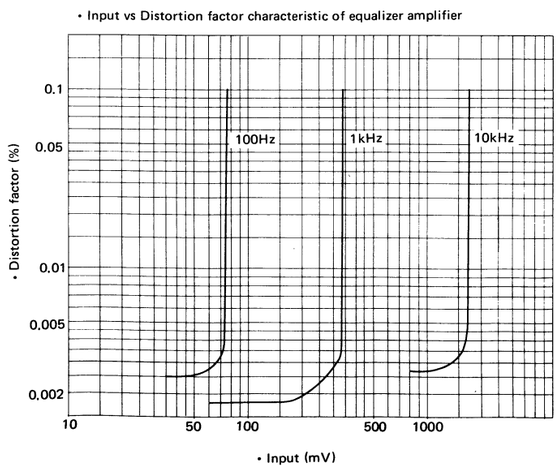


Figure 7–2

TONE CONTROL CIRCUIT

Coming from the function selector switch (SW101-B, -C), signals are once applied to the tape monitor selector switches (SW201-D, -E, -F), tape dubbing selector switches (SW201-G, -H, -I), mono switch (SW201-J), audio muting switch (SW 201-A), balance control (VR201-A, -B), loudness contour switch (SW201-B) and volume control (VR202-A, -B), and then to the differential amplifier consisting of low-noise dual FET (Q201 or Q202) to be amplified. Signals thus output from the drain of the low-noise dual FET (Q201 or Q202) enter the base of transistor (Q203 or Q204).

The transistor (Q203 or Q204) is a unique circuit: while the usual one is so designed that a resistor is inserted to the emitter of transistor (Q203 or Q204) which is connected directly to the power source, this Sharp one has such a design that the emitter of transistor (Q203 or Q204) is connected to the drain in NF circuit of low-noise dual FET (Q201 or Q202), as a result of which distortions caused at the differential amplifier will be cancelled since the phase at the drain in input circuit of FET(Q201 or Q202) will be reverse in phase to that at the drain in NF circuit of FET (Q201 or Q202) . . . . . to low a distortion factor is thus assured even with no feedback operation. Signals thus output from the collector of the transistor (Q203 or Q204) are applied to the emitter follower amplifier (Q205 or Q206).

Going out of the emitter follower amplifier (Q205 or Q206), the signal is then supplied, via the coupling capacitor (C211 or C212), to the filter switches (SW201-K, -L, -M, -N).

A part of signals output from the coupling capacitor (C211 or C212) enter the gate in NF circuit of FET (Q201 or Q202) through the tone NF circuit. The tone NF circuit includes the bass control (VR203-A, -B) to emphasize or attenuate the bass sound and the treble control (VR204-A, -B) to do the same for the treble sound.

Pressing the tone control circuit on/off switch (SW201-C) gives tone controls (bass and treble) to the NF circuit, and DC bias is supplied through resistors (R243, R247 and R249, or R244, R248 and R250). And at the off position of tone control circuit on/off switch, NF circuit is fixed at resistors (R243 and R247, or R244 and R248) so that a flat frequency characteristic will be attained. In this case, capacitor is not passed on to the NF circuit, so DC amplifier operates.

The capacitors (C209 and C291, or C210 and C292) are for prevention of oscillation.

The resistor (R251 or R252) and capacitor (C213 or C214) are to prevent the tone amplifier from getting unstabilized in the high-frequency band.

The capacitor (C207 or C208) is for prevention of external noises.

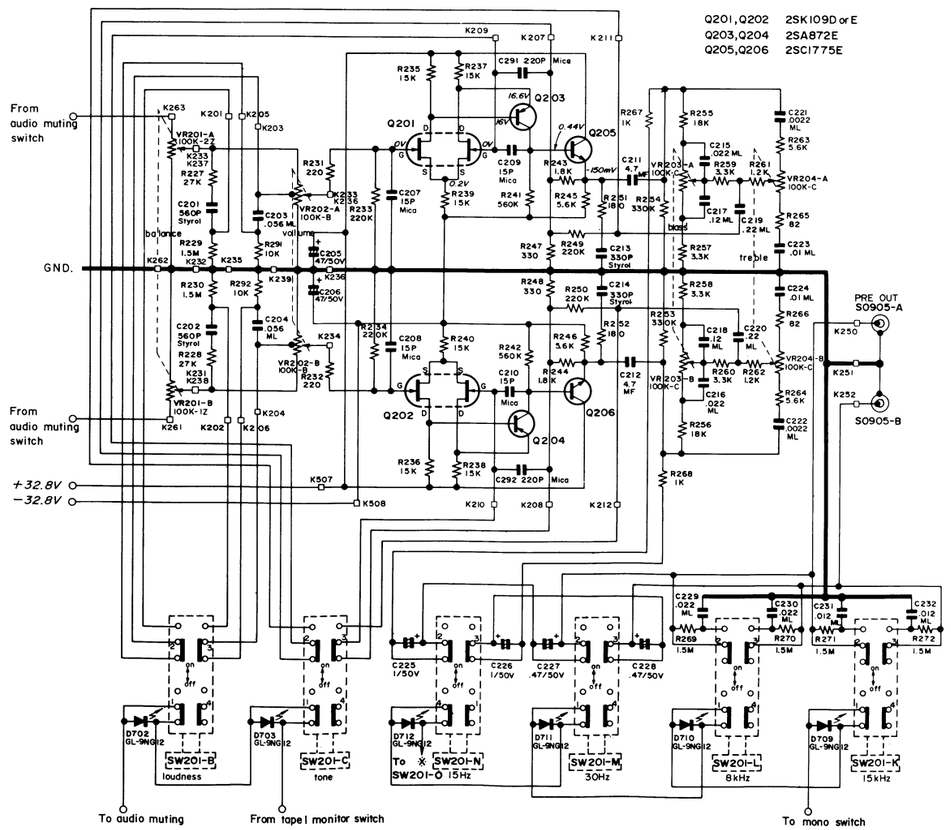


Figure 8

POWER AMPLIFIER

The power amplifier circuit is DC amplifier with symmetrically balanced driver circuit.

The signal coming from the filter switches (SW201-K, -L, -M, -N) is amplified by the differential amplifier made of low-noise transistors (Q313 and Q315, or Q314 and Q316) via resistor (R303 or R304), and then by the common-base amplifier formed by transistors (Q305, Q307, Q309 and Q311, or Q306, Q308, Q310 and Q312), further going on to the next stage. In general, most of the audio units are not provided with such cascode amplifier (Composed of Q305, Q307, Q309 and Q311, or Q306, Q308, Q310 and Q312) as in our unit. The reason of our employment of it is to prevent the transistors (Q313 and Q315, or Q314 and Q316) from being affected by possible fluctuations of the power supply voltage as well as to keep the resultant high-frequency band characteristic from degrading due to Ccb (collector-base capacitance) caused by the transistors (Q313 and Q315, or Q314 and Q316). [The potentials at the bases of transistors (Q305, Q307, Q309 and Q311, or Q306, Q308, Q310 and Q312) are kept to ±10V by the constant voltage circuit formed by transistors (Q301 and Q303, or Q302 and Q304).]

The signal going out of the transistors (Q305 and Q309, or Q306 and Q310) is then supplied to the voltage amplifier formed by transistors (Q317 and Q319, or Q318 and Q320) which are of so called push-pull operation: this design is aimed at protecting the high gain and great amplitude ensured in this amplification stage against any distortion (which may be caused without the push-pull operated design).

The amplified signal is fed to the second and sixth terminal of hybrid integrated circuit (IC301 or IC302) where the 3-stage Darlington connection is built-in, and the currently amplified signal is produced at the output of the fourth terminal. This signal is fed to the speaker terminals (TE901 or TE902) through relay (RLY401) and speakers selector switches (SW201-O, -P).

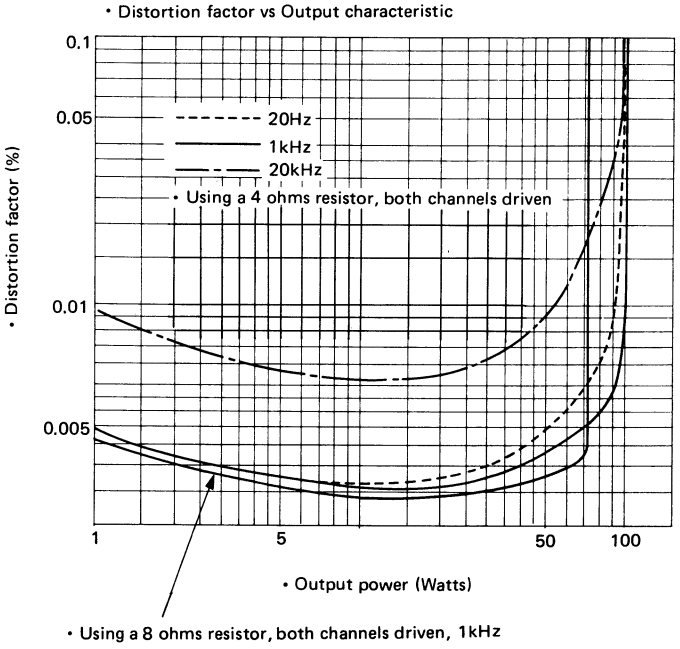


Figure 9–1

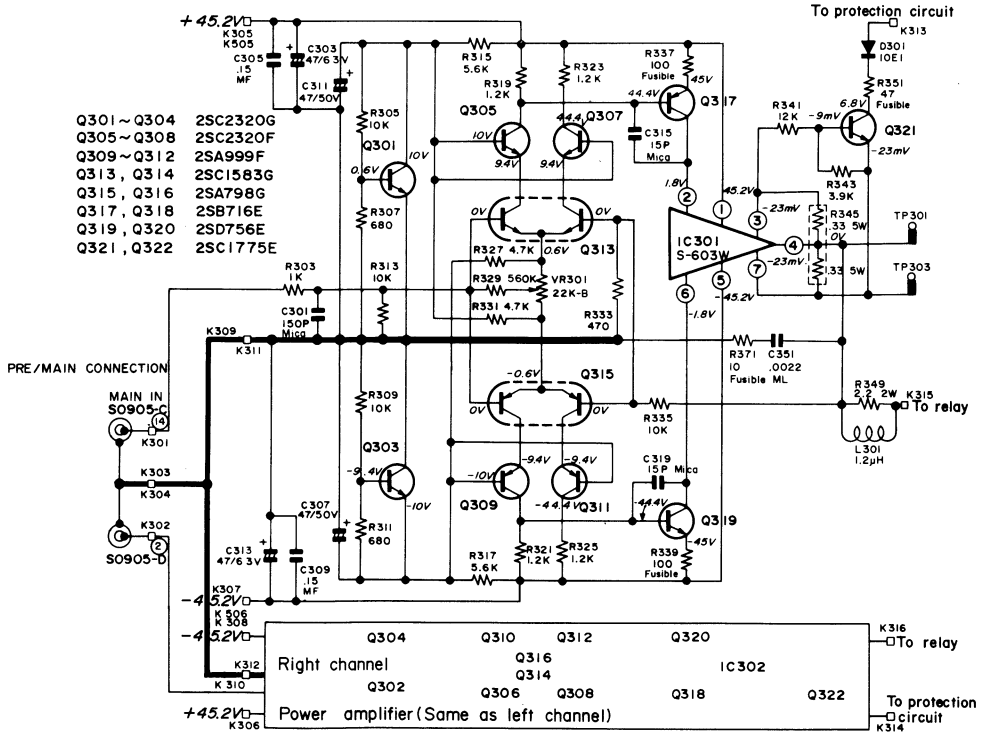


Figure 9–2

PROTECTION CIRCUIT (RELAY CIRCUIT)

The protection circuit used in this set is so designed as to function in the following instances.

(1) It protects the speaker against possible shock noise caused when the power switch is turned on.
(2) It protects the speaker against possible shock noise caused when the power switch is turned off.
(3) It functions when DC voltage is generated at the speaker terminal.
(for instance, when DC voltage gets unbalanced due to a trouble inside the amplifier).
(4) In the case of the temperature of heat sink increasing abnormally.
(5) The speaker terminals are shorted and the load impedance is lowered.
(for instance, when several speakers are connected in parallel to the amplifier).

* When the power switch is set to "on" position, until the power supply voltage to the protection circuit will become stabilized, a current runs in resistors (R410 and R412) and capacitor (C406) and since the base voltage of transistor (Q403) is increased, the transistor (Q403) is switched on to cause a current run in the relay so that output signal of the amplifier be connected to the speaker terminals. And when the power switch is set to "on" position, transistor (Q404) is switched on, and power/protection indicator (D901) lights up in red. Then when transistor (Q403) is switched on, transistor (Q404) is switched off, and power/protection indicator lights up in green.

* When the power switch is set to "off" position, the base voltage of transistor (Q402) increases and transistor (Q402) is switched on.

Then as the voltage charged in capacitor (C406) discharges through resistor (R412), the base voltage of transistor (Q403) decreases and transistor (Q403) is switched off.

As a result, the relay will be given no current to make the amplifier and speaker terminals be disconnected from each other.

* If DC voltage is generated at the speaker terminals, positive (+) or negative (–) voltage is applied to transistors (Q401 and Q402) through resistors (R407 and R408). As for the positive voltage, it is applied to the base of transistor (Q402) via resistor (R406) so as to switched on transistor (Q402). As for the negative voltage, since the emitter voltage of transistor (Q401) becomes lower than its base voltage, the transistor (Q401) is switched on, resulting in the same as stated in the foregoing paragraph: the relay will be given no current to make the amplifier and speaker terminals be disconnected from each other.

* When the temperature of heat sink increases abnormally, resistance value of over-heat preventive posistor (PTH401 and PTH402) provided at the heat sink is also increased and as a result voltage is applied to the base of transistor (Q402) via resistors (R402 and R404) and diode (D402) so that the transistor (Q402) be switched on. This results in the same as said in the foregoing paragraph: there will be no current running in the relay to disconnect the amplifier output and speaker terminals from each other.

* If the speaker terminals are shorted or load impedance is lessened, this causes in the power transistor of hybrid integrated circuit (IC301 and IC302) that the voltage produced (between the terminals 3 and 7) by its emitter resistance becomes higher than as specified so that there will be a potential difference between the base and emitter of transistor (Q321 or Q322). Accordingly, the transistor (Q321 or Q322) is switched on so that there will be a current running through diode (D301 or D302) to have transistor (Q403) be switched off.

Diode (D405) is used to keep the emitter voltage of transistor (Q403) stable.

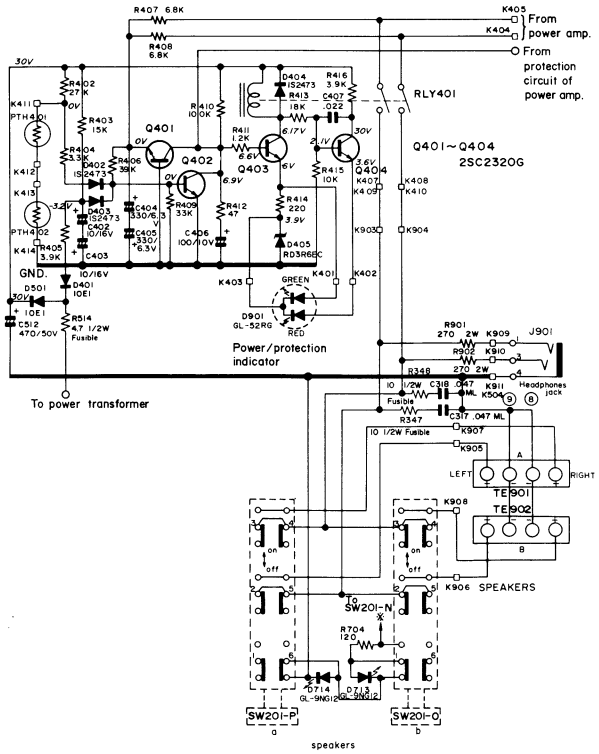


Figure 10

OUTPUT POWER INDICATOR CIRCUIT

This circuit is for rectifying and logarithmically compressing the output signal, and for operating the output power indicator. As for signal coming from power amplifier, elements of super low-range frequency are removed in capacitor (C601 or C602), and is half wave rectified in diode (D603 or D604). The signal is compressed logarithmically in diodes (D605 and D607, or D606 and D608), and it is passed on through the semi-variable resistor (VR601 or VR602) for adjusting output power indicator level, and enters into the 21st terminal of integrated circuit (IC601 or IC602) for operating output power indicator. Output power indicators (D601 or D602) lights up by the voltage at the 21st terminal of integrated circuit (IC601 or IC602).

As diode (D603 or D604) is germanium diode, large reverse voltage makes current flow in the reverse direction, and as a result an error is produced in the display of output power indicators (D601 or D602). Diode (D601 or D602) prevents these situations.

Capacitor (C603 or C604) is for lengthening the light up time of output power indicators (D601 or D602).

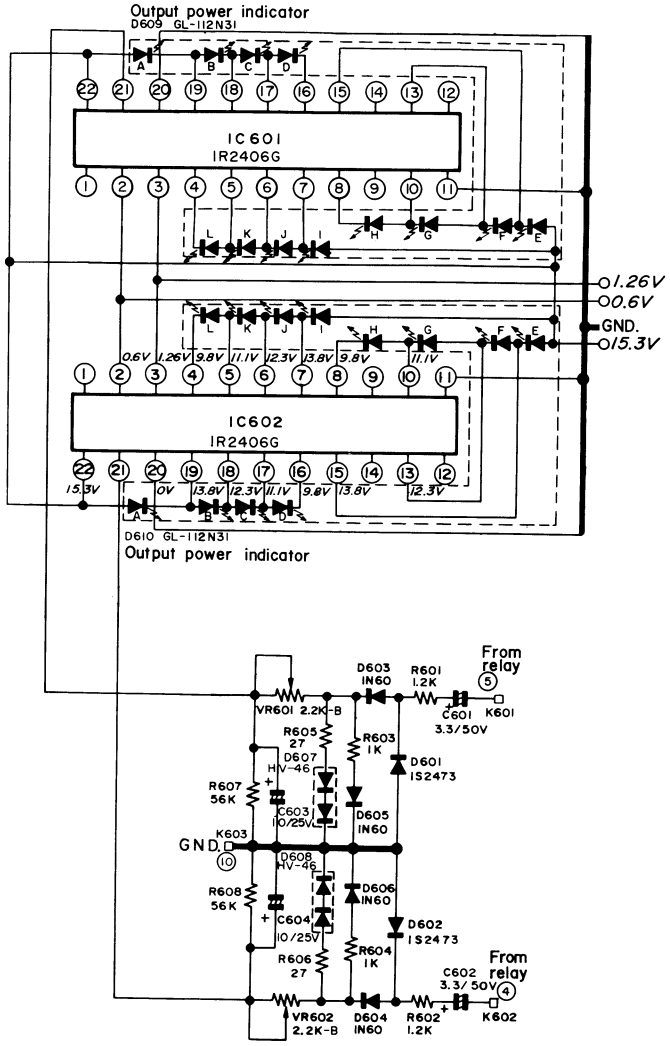


Figure 11

POWER SUPPLY CIRCUIT

The power transformer of this unit employs thin troidal core transformer the voltage regulation of which is excellent. The output voltage of the second alternating current of power transformer (T901) is rectified in the bridged all wave rectifier circuit (D505), and is supplied to the regulated voltage power supply circuit for power amplifier and equalizer/tone control circuit through smoothing circuit consisting of low impedance capacitors (C905 and C907, or C906 and C908).

Capacitors (C901 to C904) are for removing the switching noise of rectifier circuit and noises from the primary side of power transformer.

The positive (+) side of regulated voltage power supply circuit for equalizer and tone control circuit consists of transistors (Q501, Q503, Q505 and Q507), and the negative (−) side consists of transistors (Q502, Q504, Q506 and Q508). Transistor (Q507 or Q508) is for the detection of output voltage, and it operates measuring comparatively the reference voltage regulated by zener diode (D502 or D503) and the voltage available partly at resistors (R503 and R507, or R504 and R508). For example, if the positive (+) side of output voltage rises, base voltage of transistor (Q507) rises, and a current flows from collector of transistor (Q507) to emitter. At this time because of fall of voltage in the source side of FET (Q501), the base voltage of transistor (Q505) falls. As a result base voltage of transistor (Q503) falls, and the resistance between collector-emitter of transistor (Q503) increases, and finally the output voltage falls. In the case of fall of output voltage, the movement reverse to the above said occurs.

Electrolytic capacitor (C503 or C504) is for absorbing the noise of zener diode (D502 or D503), and electrolytic capacitors (C501 and C513, or C502 and C514) serves as a ripple filter. FET (Q501 or Q502) operates as a regulated current supply load for transistor (Q507 or Q508). Alternating current output voltage coming from the second side tap of power transformer (T901) enters into fusible resistor (R514), and is half wave rectified in diode (D501), and through electrolytic capacitor (C512) for smoothing is supplied to the regulated current circuit for switch indicators, and protection circuit, and to the regulated voltage circuit for output power indicator.

The regulated current circuit for switch indicators consists of transistor (Q509), diode (D504) and resistor (R518), and lights up the directly connected indicators (D701 to D712). The amount of current is determined in diode (D504) and resistor (R518). Resistors (R701 to R704) reduce the load on transistors (Q509) when indicators (D701, D706, D708 and D713) do not light up.

The regulated voltage circuit for output power indicator employs 1-tip monolithic IC regulator, and its output voltage attains 15 V. The voltage partly available in resistors (R512 and R513) and resistor (R511) is fed to the terminal 3 of IC (IC601 or IC602) and becomes standard voltage for the comparison with the input signal.

The voltage partly available in resistors (R511 and R512) and resistor (R513) is fed to the terminal 2 of IC (IC601 or IC602), and it regulates the current flowing in LED.

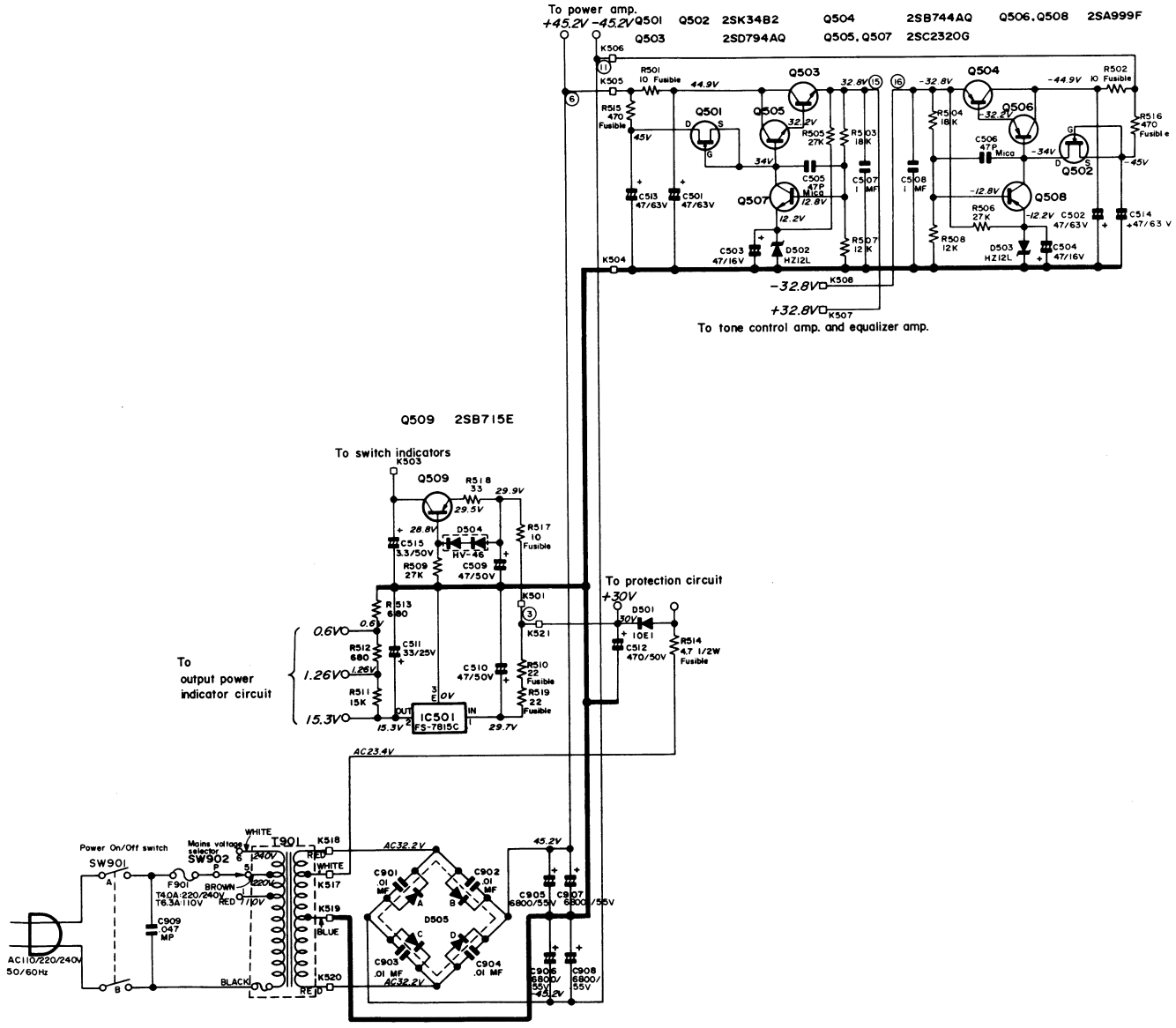


Figure 12

ADJUSTMENT OF POWER AMPLIFIER AND OUTPUT POWER INDICATOR

1. Set the volume control to "0" position.
2. Set the power switch (SW901) to "on" position.
3. Offset Voltage Adjustment

ALIGNMENT	METER	OUTPUT INDICATOR	ADJUSTMENT	REMARKS
Output DC voltage (0 volt)	100mV DC volt-meter	Voltmeter is connected between the test points.	VR301 for left channel, VR302 for right channel	0V ± 3mV

4. Connect a DC millivoltmeter between the test points TP301 (or TP304) and TP303 (or TP302).
5. If the idle current is normal, the DC millivoltmeter should read 9 mV to 26 mV.
6. Output Power Indicator Adjustment
   (1) By using a signal generator (1 kHz, 200 mV), apply signals to the jack "AUX" at the rear of the unit and adjust the volume control and balance control so that the output of the speaker terminal becomes 16.0 V.
   (2) Adjust the variable resistor VR601 (or VR602) so that the 12th LED (at the extreme right) of the output power indicator will be put off.
   (3) Adjust the volume control and balance control so that the output of the speaker terminal becomes 2.0 V: see, then, that six LEDs (say, up to the 6th one) of the output power indicator are lighting up.

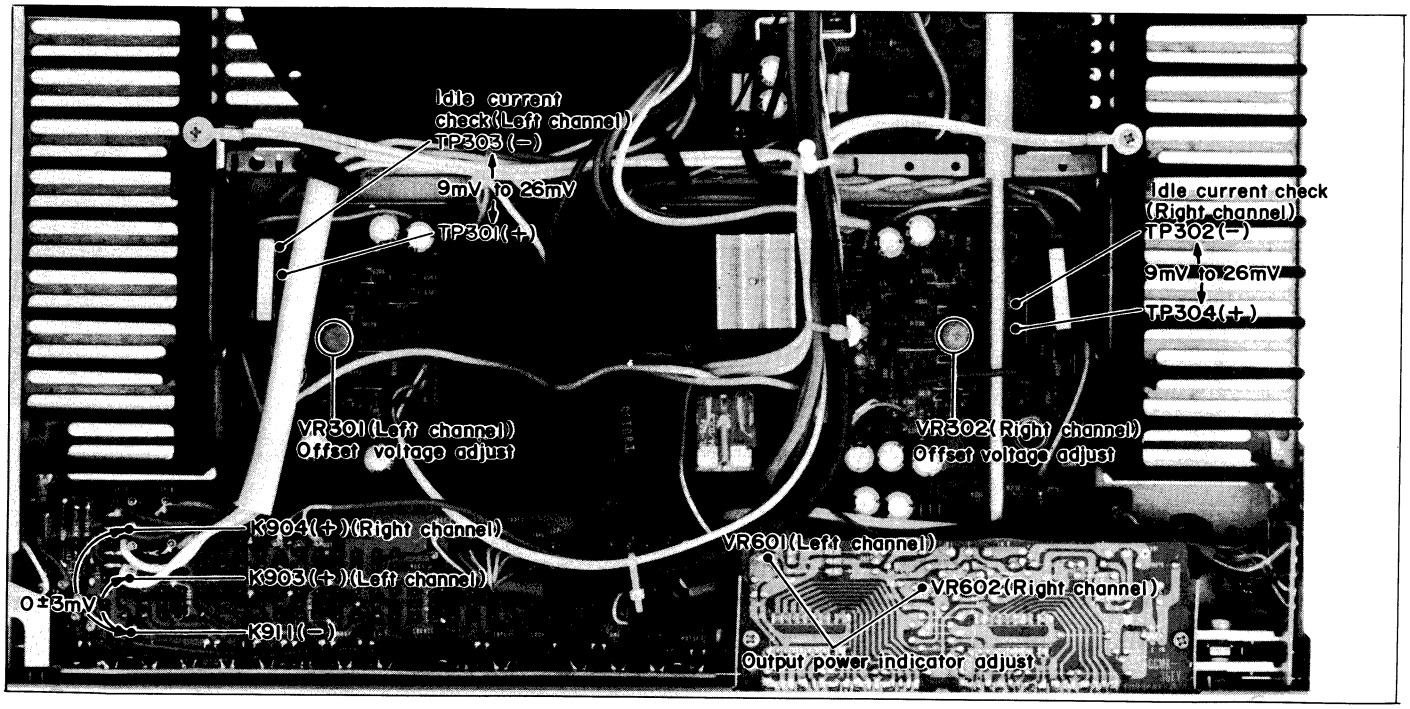


Figure 13–1

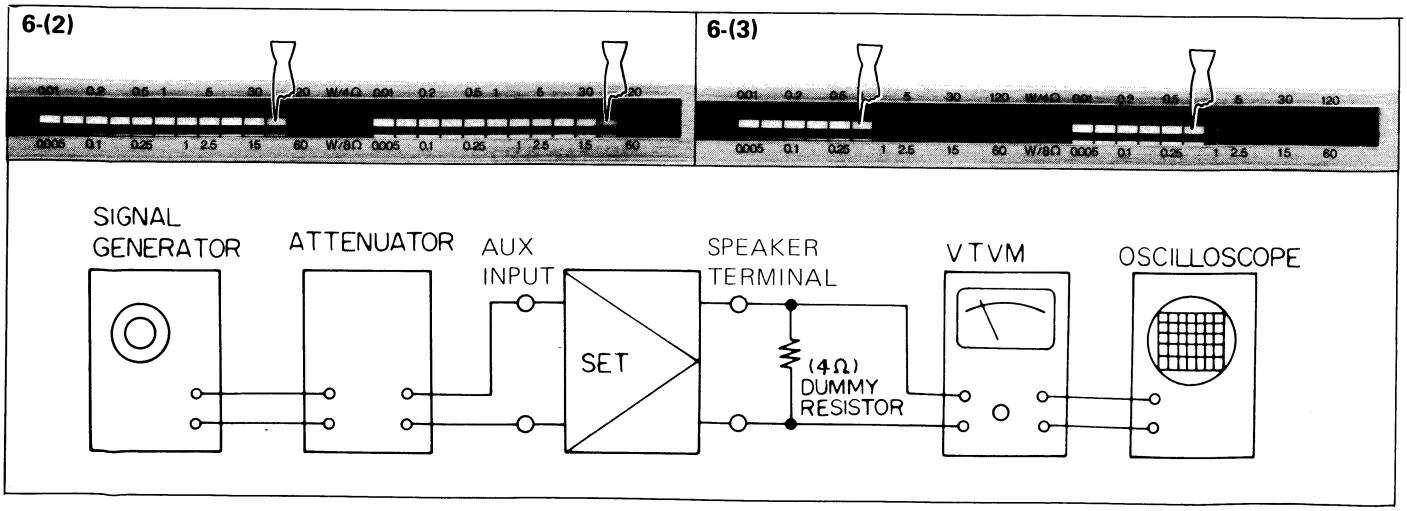


Figure 13–2

HYBRID INTEGRATED CIRCUIT REPLACEMENT

Observe the following procedures when replacing the hybrid integrated circuit with a new one: handling it requires a great care since it is very a precision part, or it would be damaged to again get in a failure.

1. Remove the cabinet and bottom lid following the "DISASSEMBLY".
2. Unsolder the printed wiring board on the hybrid integrated circuit (IC301 or IC302) ——— melt and remove the solder of it.
3. Remove the four (4) screws retaining the heat sink and the one (1) screw retaining the positive temperature coefficient thermistor (PTH401 or PTH402).
4. Hold the heat sink up being careful not to damage the fitting part of the printed wiring board against the hybrid integrated circuit.
5. Remove the two (2) screws retaining the hybrid integrated circuit and take it out from the heat sink.
6. Clean away the surface of a new hybrid integrated circuit, to which the heat sink will get close, and apply silicone grease thereto.
7. Attach the new hybrid integrated circuit to the heat sink with the two (2) screws.
8. Insert the pins of hybrid integrated circuit into the printed wiring board and fix the heat sink with the four (4) screws.
9. Solder the pins of the hybrid integrated circuit.

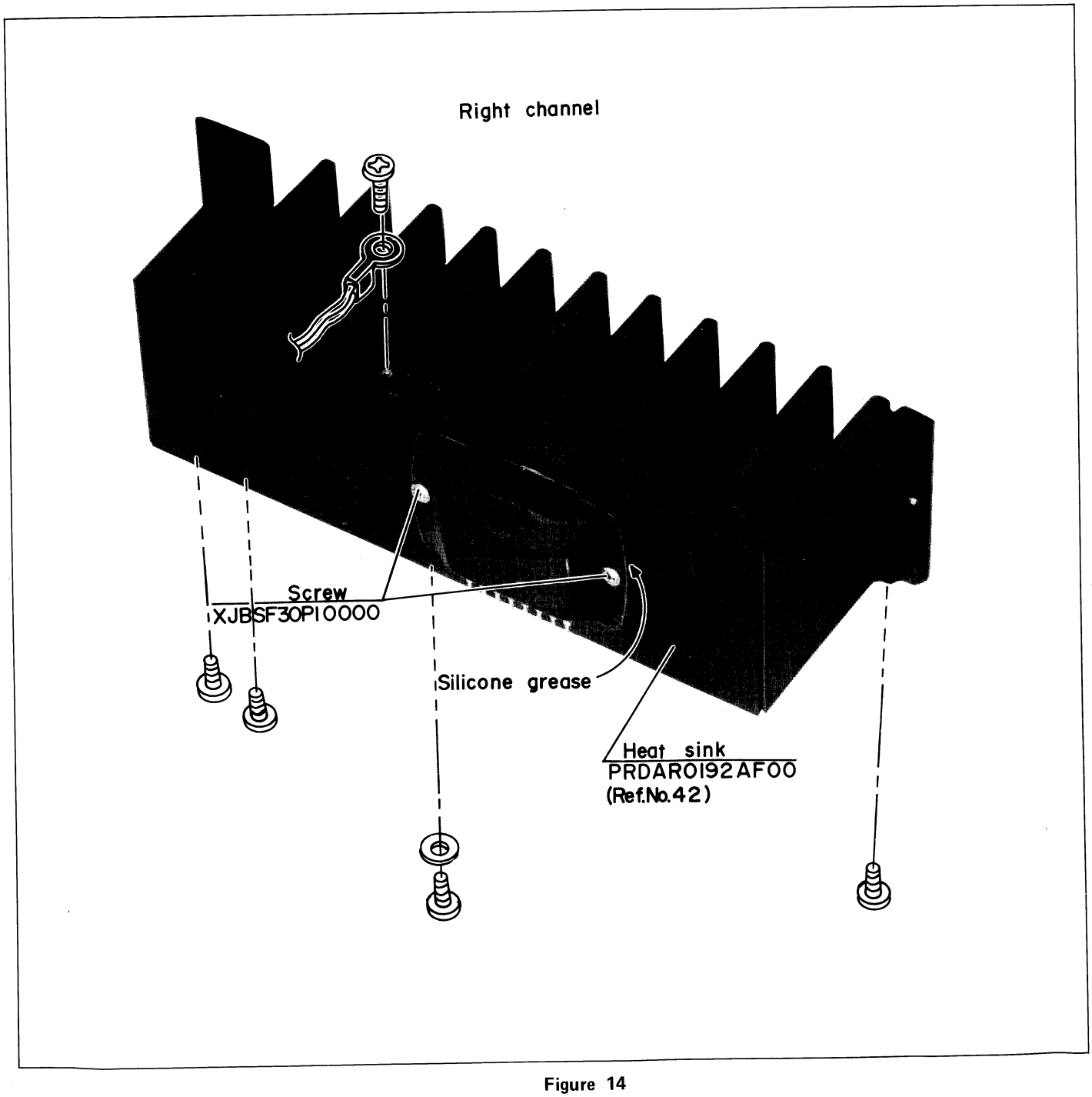
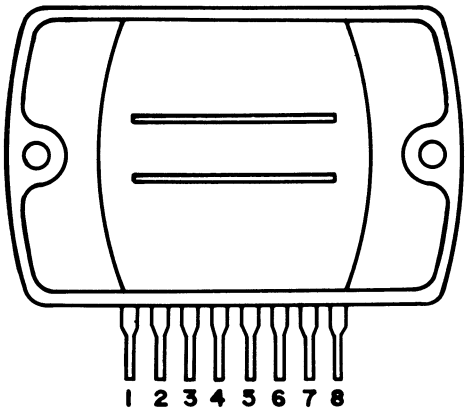


Figure 14

IC301, IC302
RH-IX1128AFZZ(S-603W)



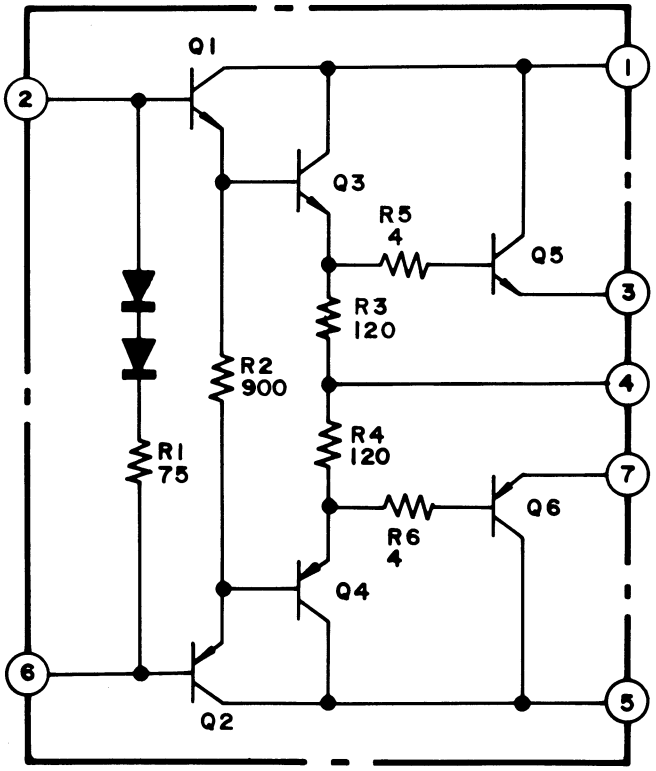
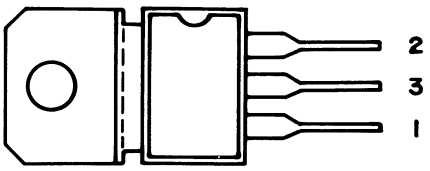


Figure 15–1 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC301, IC302)

IC501
VHIFS-7815C-1(FS-7815C)



1. Input
2. Output
3. Common

Figure 15–2 OUTER VIEW OF INTEGRATED CIRCUIT (IC501)

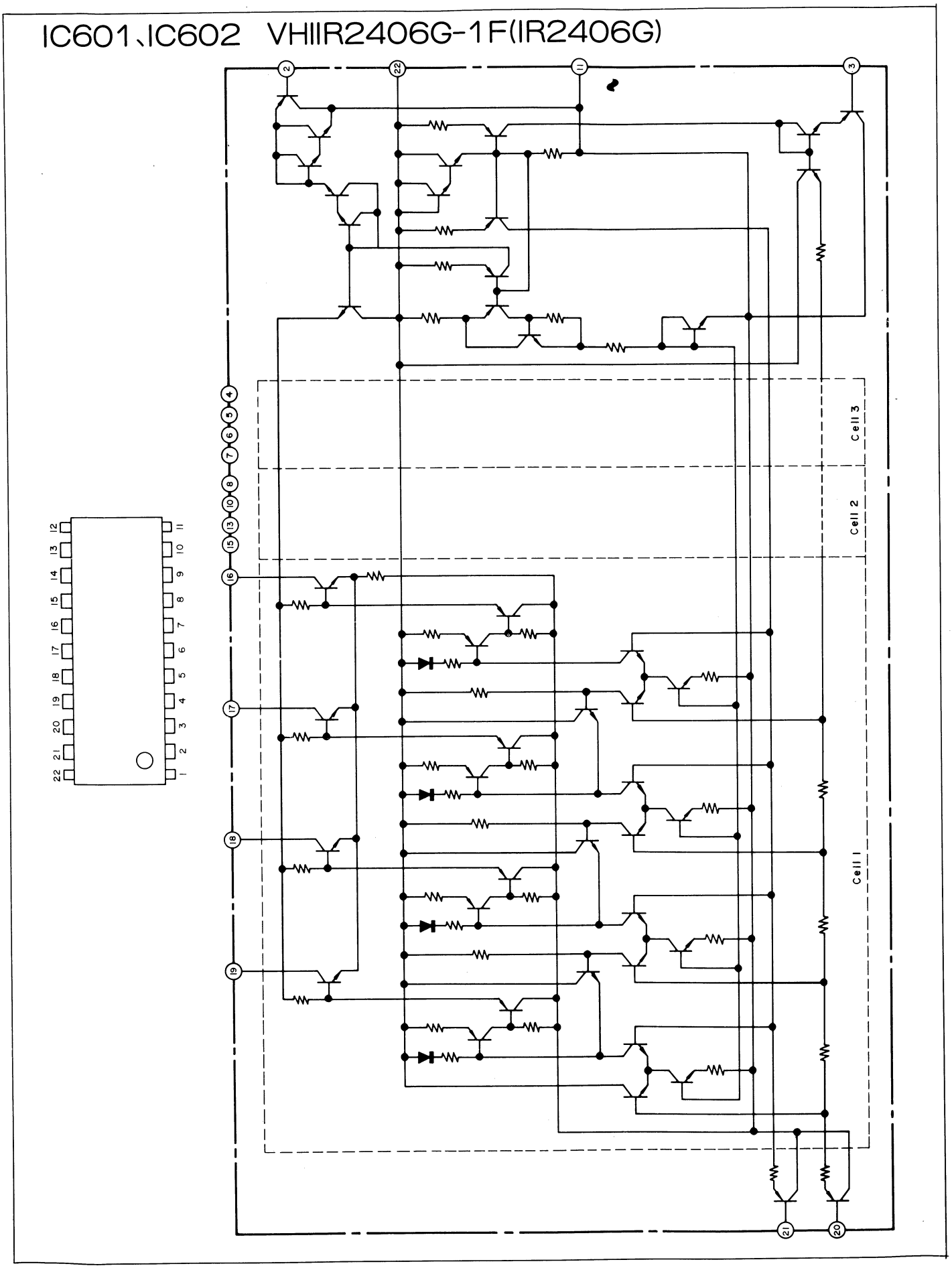
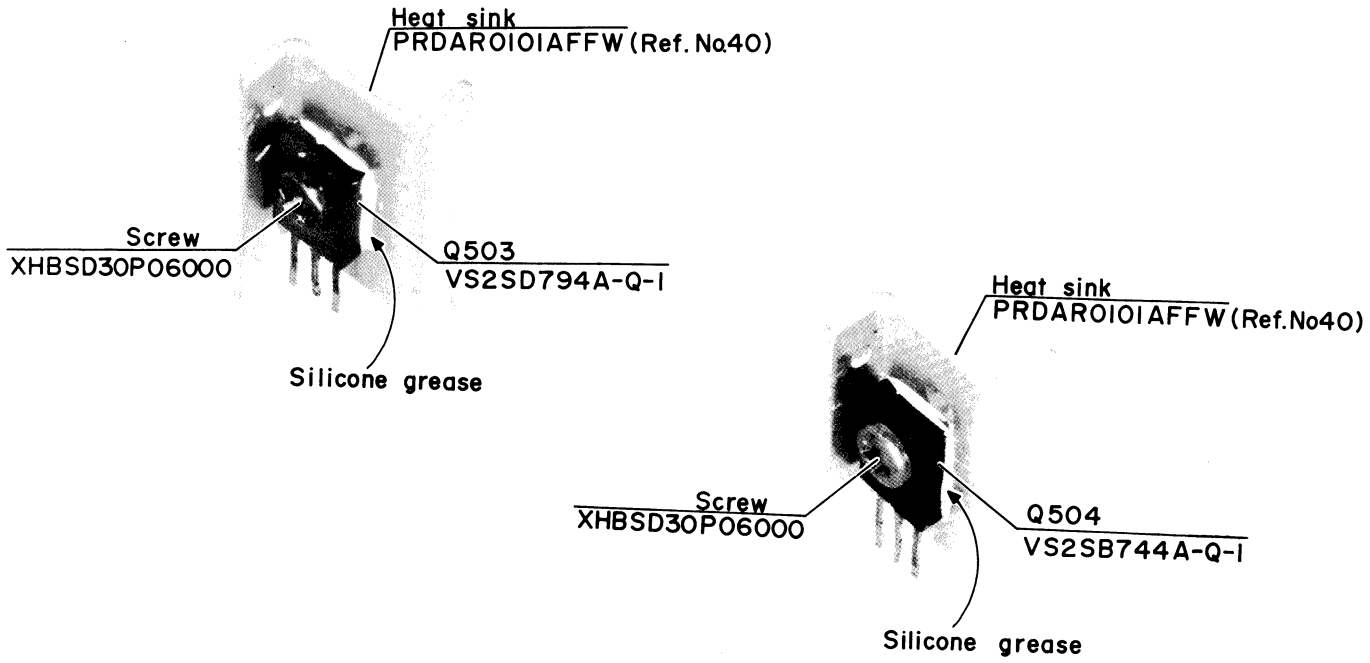


Figure 16 EQUIVALENT CIRCUIT OF INTEGRATED CIRCUIT (IC601, IC602)

VOLTAGE REGULATOR TRANSISTOR REPLACEMENT

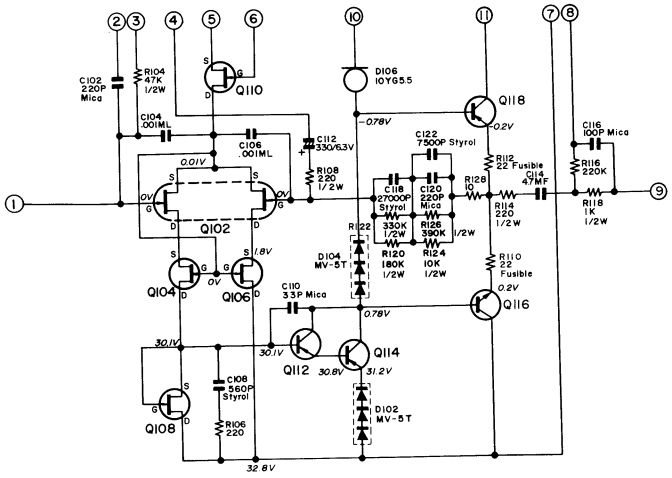


NOTES ON SCHEMATIC DIAGRAM

1. SW101 (A, B, C): Function selector switch. (Shown in "aux" position.)
2. SW201A: Audio muting switch. (Shown in off mode.)
3. SW201B: Loudness contour switch. (Shown in off mode.)
4. SW201C: Tone control circuit on/off switch. (Shown in off mode.)
5. SW201D: Tape 1 monitor switch. (Shown in off mode.)
6. SW201E: Source monitor switch. (Shown in on mode.)
7. SW201F: Tape 2 monitor switch. (Shown in off mode.)
8. SW201G: 2▶1 tape dubbing switch. (Shown in off mode.)
9. SW201H: Source dubbing switch. (Shown in on mode.)
10. SW201I: 1▶2 tape dubbing switch. (Shown in off mode.)
11. SW201J: Mono switch. (Shown in off mode.)
12. SW201K: 15 kHz high filter switch. (Shown in off mode.)
13. SW201L: 8 kHz high filter switch. (Shown in off mode.)
14. SW201M: 30 Hz subsonic filter switch. (Shown in off mode.)
15. SW201N: 15 Hz subsonic filter switch. (Shown in off mode.)
16. SW201O: "b" speaker switch. (Shown in off mode.)
17. SW201P: "a" speaker switch. (Shown in off mode.)
18. SW901: Power switch. (Shown in off mode.)
19. SW902: Mains voltage selector switch. (Shown in "220 V" position.)
20. Resistor: To differentiate the units of resistors, such symbols as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000K ohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
21. Capacitor: To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-microfarad and the unit of the capacitor without such symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.
22. The indicated voltage in each section is the one measured by VTVM between such a section and the chassis with no signal being given.

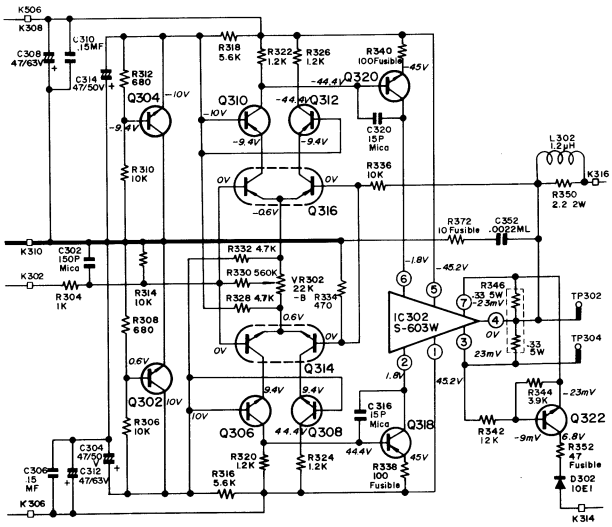
Equalizer amplifier

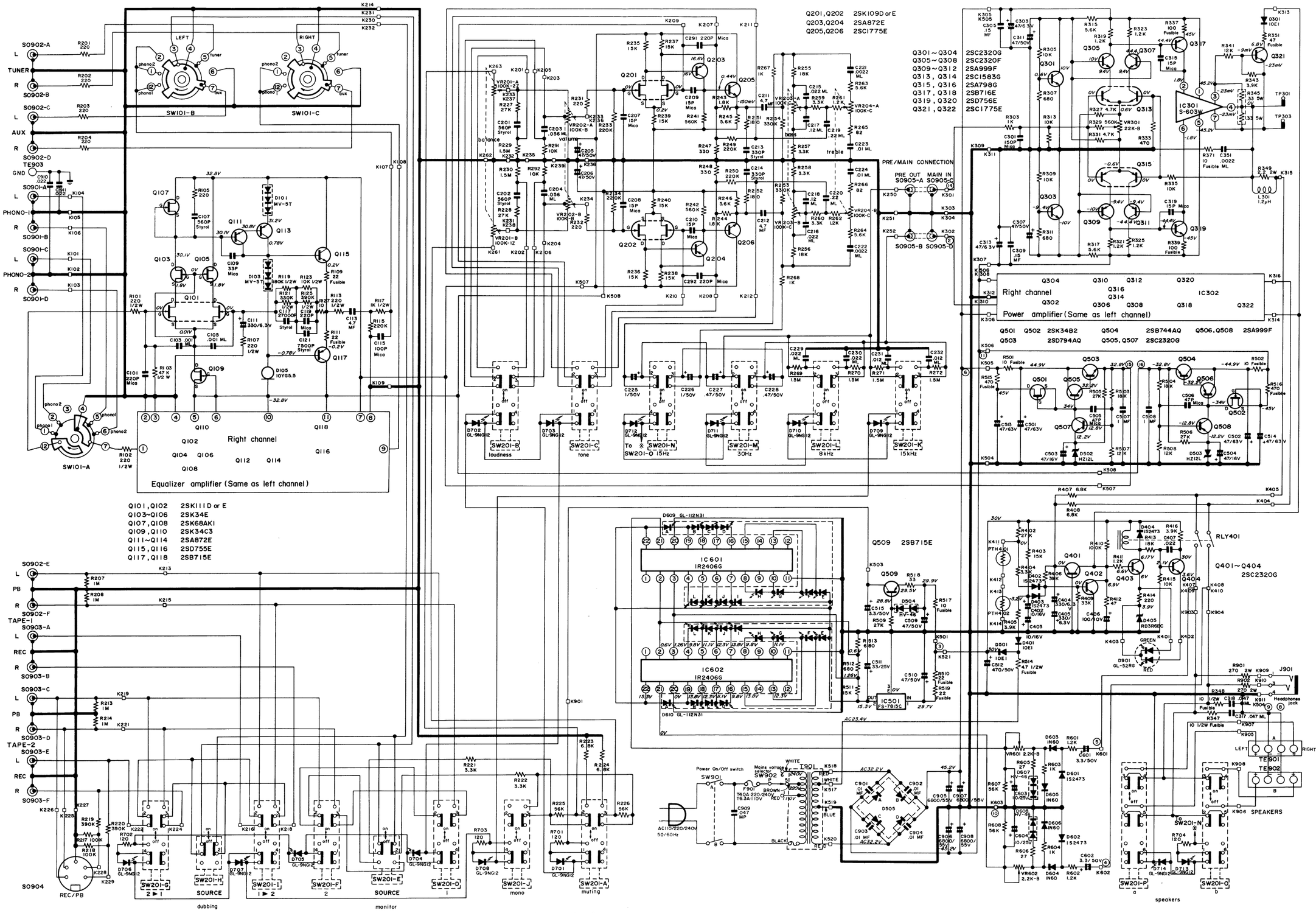
Right channel



Power amplifier

Right channel





(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 19 SCHEMATIC DIAGRAM

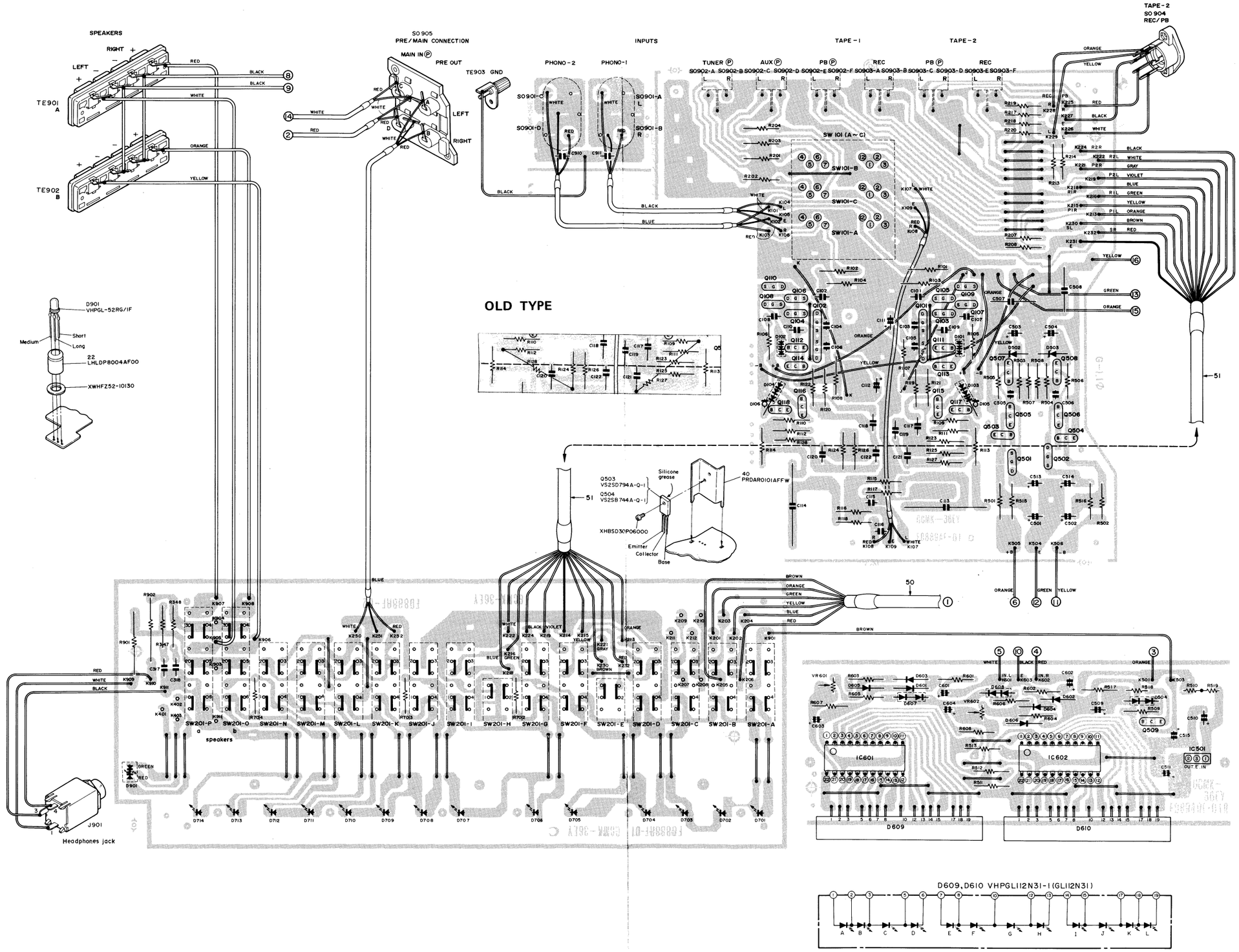


Figure 21 WIRING SIDE OF SWITCHES P.W. BOARD, OUTPUT POWER INDICATOR CIRCUIT P.W. BOARD AND EQUALIZER CIRCUIT P.W. BOARD

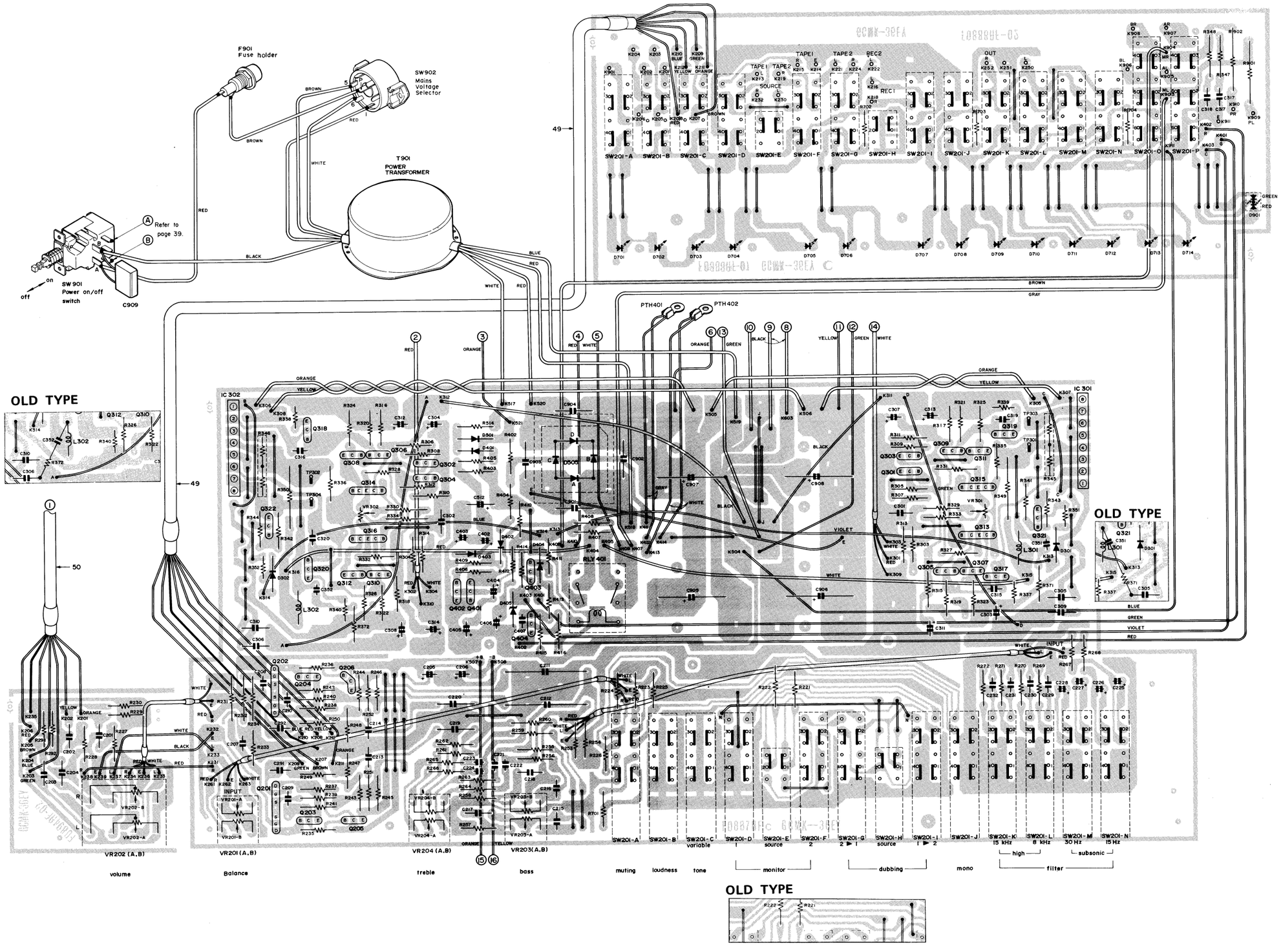
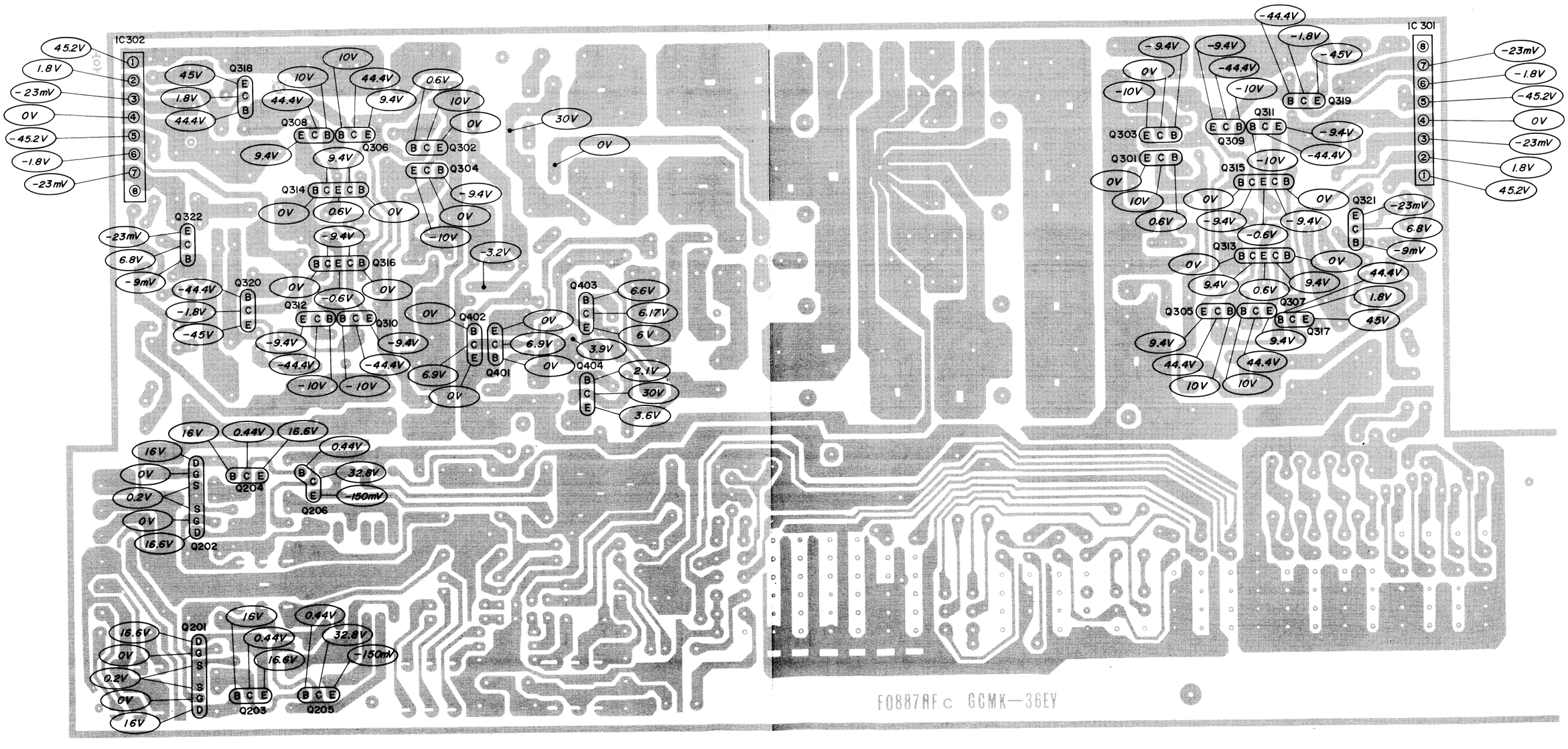
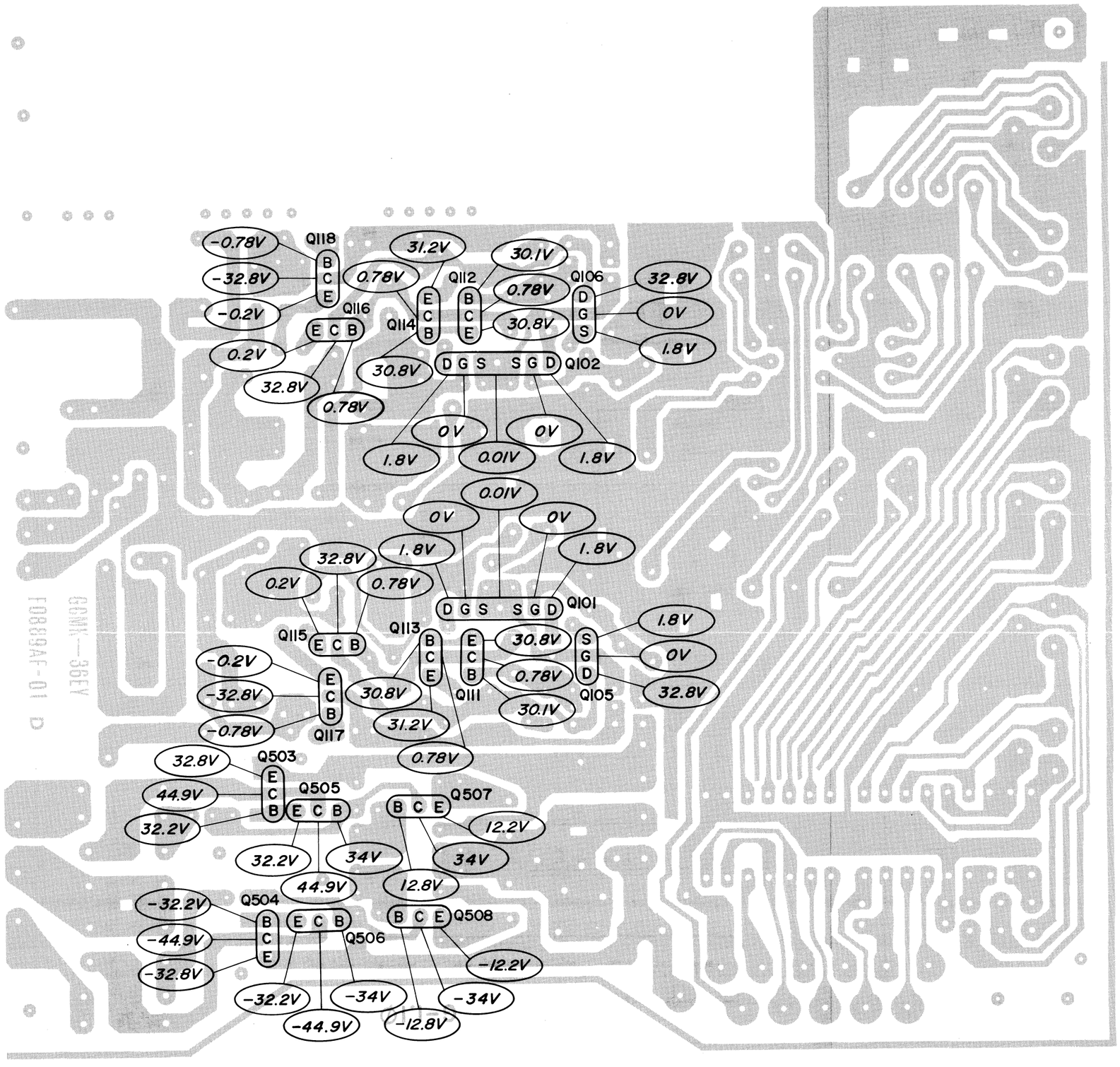


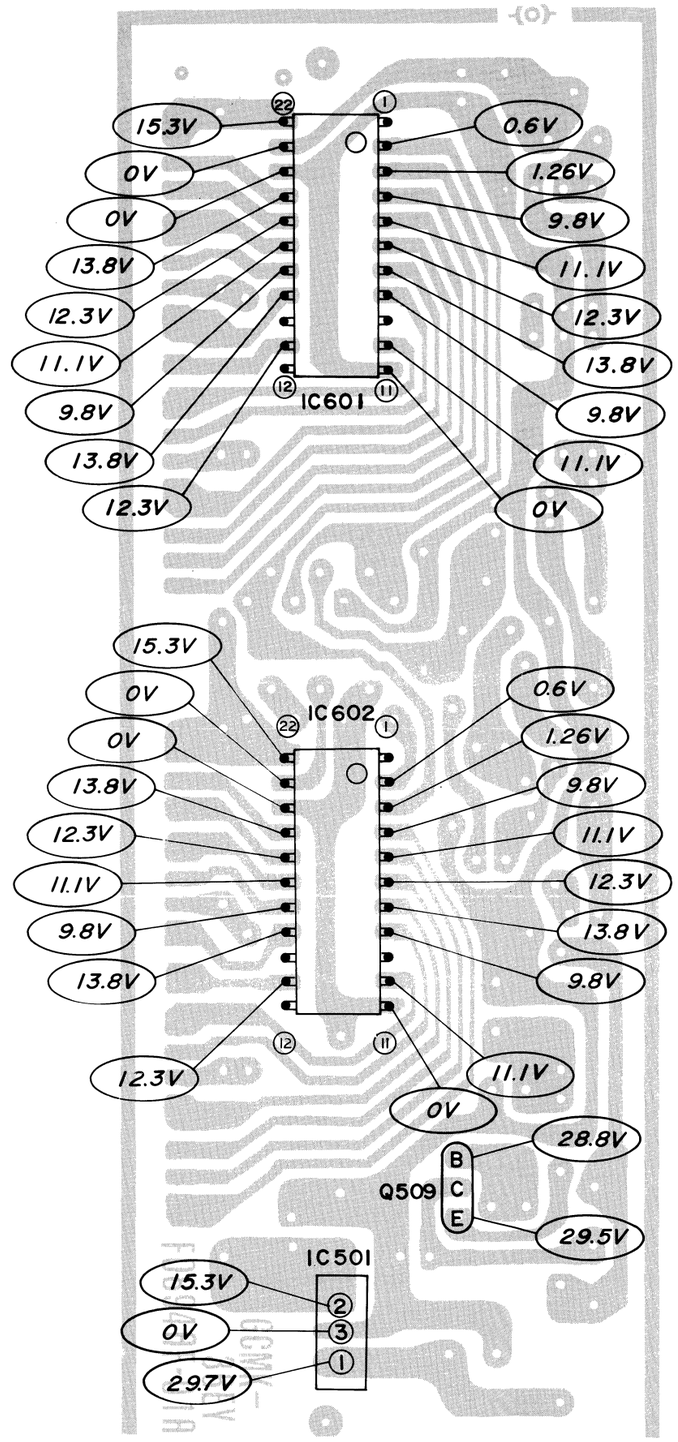
Figure 23 WIRING SIDE OF TONE CONTROL CIRCUIT/POWER AMPLIFIER P.W. BOARD



* The indicated voltage in each section is the one measured by VTVM between such a section and the chassis with no signal being given.

Figure 25 VOLTAGES ON TONE CONTROL CIRCUIT/POWER AMPLIFIER P.W. BOARD



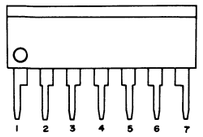


* The indicated voltage in each section is the one measured by VTVM between such a section and the chassis with no signal being given.

Figure 27 VOLTAGES ON EQUALIZER CIRCUIT P.W. BOARD AND OUTPUT POWER INDICATOR CIRCUIT P.W. BOARD

Q101,Q102
VS2SK111-D/-1 (2SK111D)

Q201,Q202
VS2SK109//-IF (2SK1090)

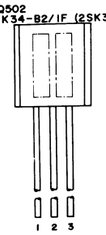


1. Drain - 1
2. Gate - 1
3. Source - 1
4. Void pin
5. Source - 2
6. Gate - 2
7. Drain - 2

Q103,Q104,Q105,Q106
VS2SK34-E //-1(2SK34E)

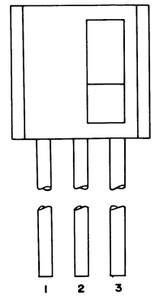
Q109,Q110
VS2SK34-C3/IF (2SK34C3)

Q501,Q502
VS2SK34-B2/IF (2SK3482)



1. Source
2. Gate
3. Drain

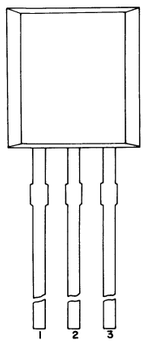
Q107,Q108
VS2SK68A-K 1-1(2SK68AK1)

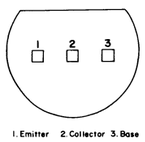


1. Drain
2. Gate
3. Source

Q111,Q112,Q113,Q114,Q203,Q204
VS2SA872-E/-1 (2SA872E)

Q205,Q206,Q321,Q322
VS2SC1775E/-1 (2SC1775E)

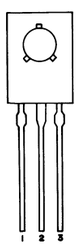




1. Emitter 2. Collector 3. Base

Q503
VS2SD794A-Q-1 (2SD794AQ)

Q504
VS2SB744A-Q-1 (2SB744AQ)



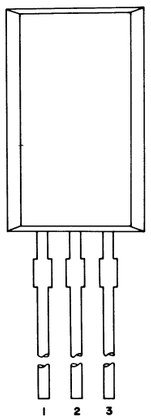
1. Emitter
2. Collector
3. Base

Q115,Q116
VS2SD755-E/-1(2SD755E)

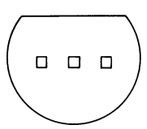
Q117,Q118,Q509
VS2SB715-E/-1(2SB715E)

Q317,Q318
VS2SB716-E/-1(2SB716E)

Q319,Q320
VS2SD756-E/-1(2SD756E)



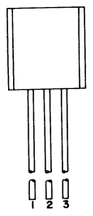
1. Emitter
2. Collector
3. Base



Q301,Q302,Q303,Q304,
Q401,Q402,Q403,Q404,
Q505,Q507
VS2SC2320-G-1(2SC2320G)

Q305,Q306,Q307,Q308
VS2SC2320-F-1(2SC2320F)

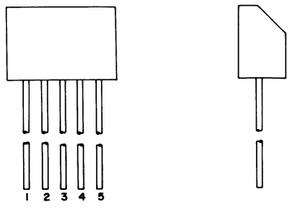
Q309,Q310,Q311,Q312,Q506,Q508
VS2SA999-F/-1(2SA999F)



1. Emitter
2. Collector
3. Base

Q313,Q314
VS2SC1583G2-4 (2SC1583G)

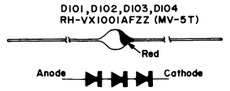
Q315,Q316
VS2SA798-G2-4(2SA798G)



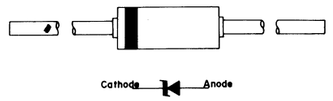
1. Base 1
2. Collector 1
3. Emitter (Common)
4. Collector 2
5. Base 2

Figure 29 TRANSISTORS TYPE

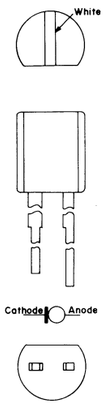
D101,D102,D103,D104
RH-VX1001AFZZ (MV-5T)



D405
VHERD3R6EC/-1(RD3R6EC)

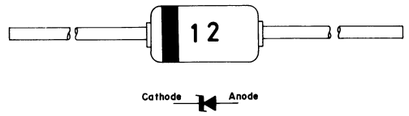


D105,D106
RH-DX1011AFZZ (10YG5.5)



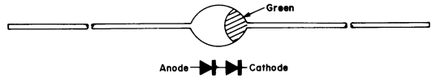
D402,D403,D404,D601,D602
VHDIS2473//-1 (IS2473)

D502,D503
VHEHZ12A2L/-1 (HZ12L)



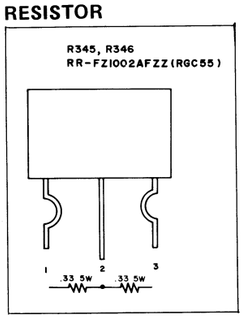
D301,D302,D401,D501
VHDIOEI////-1(IOEI)

D504,D607,D608
VHVHV46-G//-1 (HV46G)



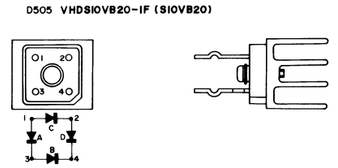
RESISTOR

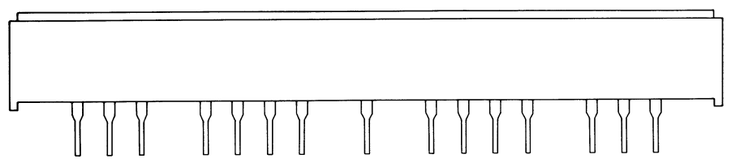
R345, R346
RR-FZ1002AFZZ(RGC55)

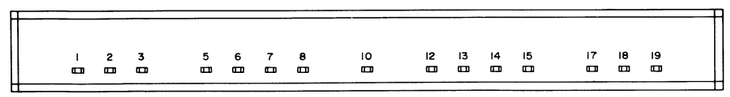


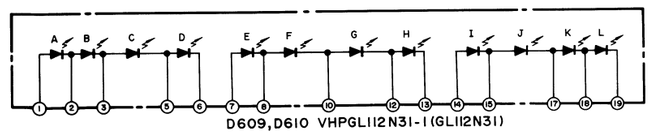
D603,D604,D605,D606
VHDIN60////-1 (IN60)

D505 VHDS10VB20-IF (S10VB20)



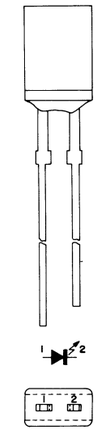






D609,D610 VHPGLI12N31-1(GLI12N31)

D701, D702,D703,D704,D705,D706,D707,
D708,D709,D710,D711,D712,D713,D714
VHPGL-9NGI2-1(GL-9NGI2)



D901
VHPGL-52RG/IF (GL-52RG)

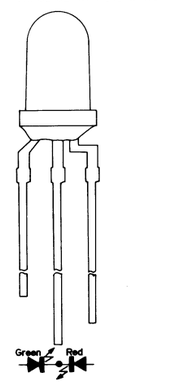


Figure 30 DIODES TYPE

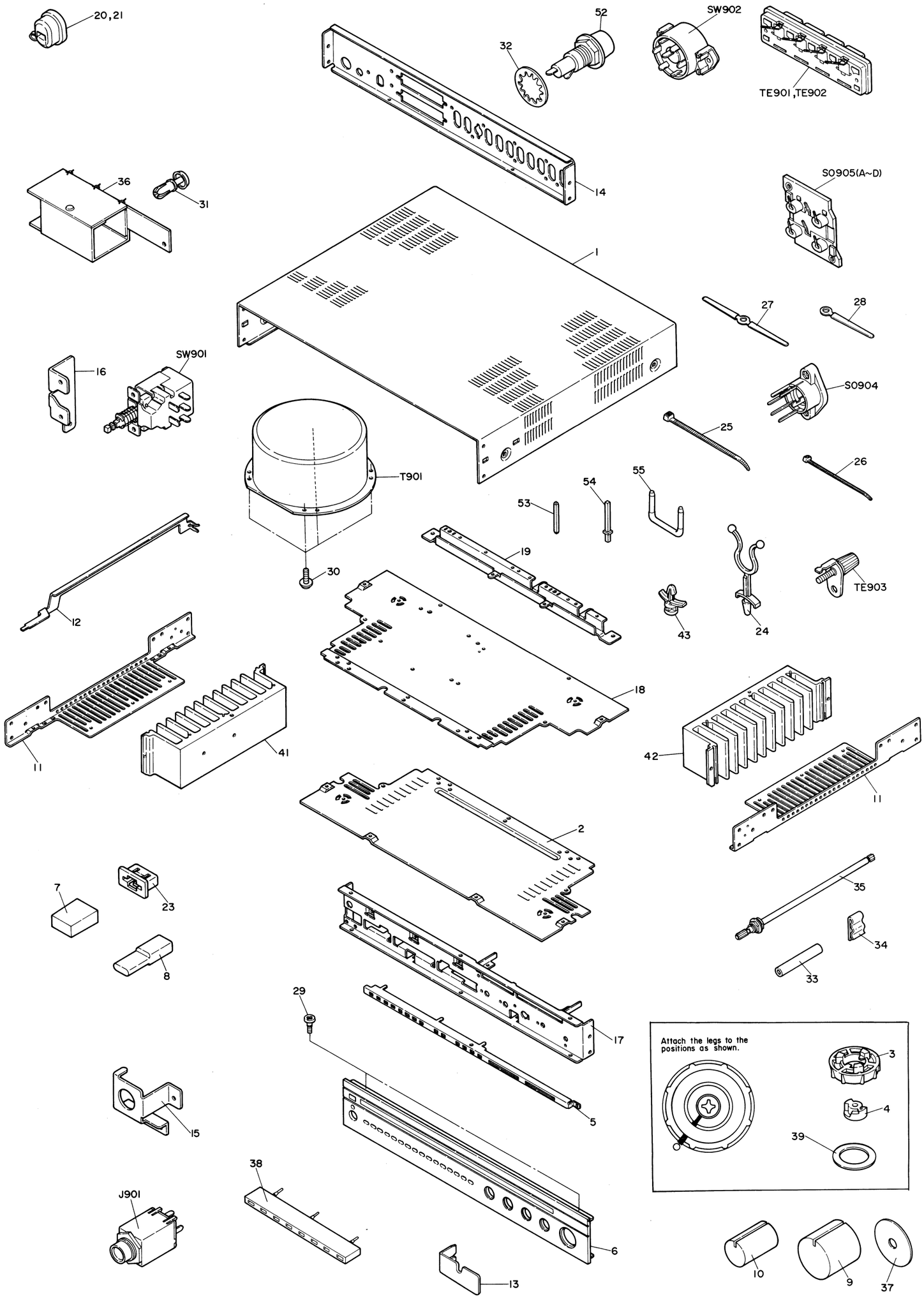


Figure 32 MISCELLANEOUS PARTS GUIDE

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE
		INTEGRATED CIRCUITS	
IC301, IC302	RH-IX1128AFZZ	Power Amplifier (S-603W)	BA
IC501	VHIFS-7815C-1	Voltage Regulator, 15V/300mA (FS-7815C)	AH
IC601, IC602	VHIIR2406G-1F	Output Power Indicator Drive (IR2406G)	AQ
		TRANSISTORS	
Q101, Q102	VS2SK111-D/-1	Equalizer Circuit, Differential Amplifier (2SK111D or E)	AP
Q103, Q104, Q105, Q106	VS2SK34-E//-1	Equalizer Circuit, Common Gate Amplifier (2SK34E)	AE
Q107, Q108	VS2SK68A-K1-1	Equalizer Amplifier, Constant Current Load (2SK68AK1)	AE
Q109, Q110	VS2SK34-C3/1F	Equalizer Amplifier, Constant Current Circuit (2SK34C3)	AE
Q111, Q112, Q113, Q114	VS2SA872-E/-1	Equalizer Circuit, Common Emitter Amplifier (2SA872E)	AE
Q115, Q116	VS2SD755-E/-1	Equalizer Circuit, SEPP (Single Ended Push-Pull) Amplifier (2SD755E)	AD
Q117, Q118	VS2SB715-E/-1	Equalizer Circuit, SEPP (Single Ended Push-Pull) Amplifier (2SB715E)	AD
Q201, Q202	VS2SK109//-1F	Tone Control Circuit, Differential Amplifier (2SK109D or E)	AH
Q203, Q204	VS2SA872-E/-1	Tone Control Circuit, Common Emitter Amplifier (2SA872E)	AE
Q205, Q206	VS2SC1775E/-1	Tone Control Circuit, Emitter Follower Amplifier (2SC1775E)	AD
Q301, Q302, Q303, Q304	VS2SC2320-G-1	Power Amplifier, Constant Voltage Circuit (2SC2320G)	AB
Q305, Q306, Q307, Q308	VS2SC2320-F-1	Power Amplifier, Common Base Amplifier (2SC2320F)	AB
Q309, Q310, Q311, Q312	VS2SA999-F/-1	Power Amplifier, Common Base Amplifier (2SA999F)	AE
Q313, Q314	VS2SC1583G2-4	Power Amplifier, Differential Amplifier (2SC1583G)	AF
Q315, Q316	VS2SA798-G2-4	Power Amplifier, Differential Amplifier (2SA798G)	AF
Q317, Q318	VS2SB716-E/-1	Power Amplifier, Voltage Amplifier (2SB716E)	AD
Q319, Q320	VS2SD756-E/-1	Power Amplifier, Voltage Amplifier (2SD756E)	AD
Q321, Q322	VS2SC1775E/-1	Power Amplifier, Transient Current Detection Circuit (2SC1775E)	AD
Q401	VS2SC2320-G-1	Protection Circuit, Detector (2SC2320G)	AB
Q402	VS2SC2320-G-1	Protection Circuit, Detector (2SC2320G)	AB
Q403	VS2SC2320-G-1	Protection Circuit, Relay Switching (2SC2320G)	AB
Q404	VS2SC2320-G-1	Protection Circuit, Indicator Switching (2SC2320G)	AB
Q501	VS2SK34-B2/1F	Constant Voltage Circuit, Constant Current Load (2SK34B2)	AE
Q502	VS2SK34-B2/1F	Constant Voltage Circuit, Constant Current Load (2SK34B2)	AE
Q503	VS2SD794A-Q-1	Constant Voltage Circuit, Voltage Regulator (2SD794AQ)	AE
Q504	VS2SB744A-Q-1	Constant Voltage Circuit, Voltage Regulator (2SB744AQ)	AE
Q505	VS2SC2320-G-1	Constant Voltage Circuit, Voltage Regulator (2SC2320G)	AB
Q506	VS2SA999-F/-1	Constant Voltage Circuit, Voltage Regulator (2SA999F)	AE
Q507	VS2SC2320-G-1	Constant Voltage Circuit, Voltage Comparison (2SC2320G)	AB
Q508	VS2SA999-F/-1	Constant Voltage Circuit, Voltage Comparison (2SA999F)	AE
Q509	VS2SB715-E/-1	Constant Current Circuit (2SB715E)	AD
		DIODES	
D101, D102	RH-VX1001AFZZ	Equalizer Amplifier, Current Stabilizer (MV-5T)	AE
D103, D104	RH-VX1001AFZZ	Equalizer Amplifier, Current Stabilizer (MV-5T)	AE
D105, D106	RH-DX1011AFZZ	Constant Current Load, 10V/5.5mA (10YG5.5)	AG
D301, D302	VHD10E1////-1	Transient Current Rectifier, 100V/1A (10E1)	AC
D401	VHD10E1////-1	Voltage Detector, 100V/1A (10E1)	AC
D402	VHD1S2473//-1	Malfunction Prevention (1S2473)	AB
D403	VHD1S2473//-1	Malfunction Prevention (1S2473)	AB
D404	VHD1S2473//-1	Surge Current Prevention (1S2473)	AB
D405	VHERD3R6EC/-1	Zener, 3.6V/400mW (RD3R6EC)	AC
D501	VHD10E1////-1	Half-wave Rectifier, 100V/1A (10E1)	AC
D502, D503	VHEHZ12A2L/-1	Zener, 12V/0.4W (HZ12L)	AC
D504	VHVHV46-G//-1	Constant Current Circuit (HV46G)	AC
D505	VHDS10VB20-1F	Power Rectifier (S10VB20)	AP
D601, D602	VHD1S2473//-1	Voltage (—) Protector (1S2473)	AB
D603, D604	VHD1N60////-1	Half-wave Rectifier (1N60)	AB
D605, D606	VHD1N60////-1	Logarithm Compression Circuit (1N60)	AB
D607, D608	VHVHV46-G//-1	Logarithm Compression Circuit (HV46G)	AC
D609, D610	VHPGL112N31-1	Indicator, Output Power (GL-112N31)	AR
D701	VHPGL-9NG12-1	Indicator, Audio Muting Switch (GL-9NG12)	AD
D702	VHPGL-9NG12-1	Indicator, Loudness Contour Switch (GL-9NG12)	AD
D703	VHPGL-9NG12-1	Indicator, Tone Control Circuit On/Off Switch (GL-9NG12)	AD
D704	VHPGL-9NG12-1	Indicator, Tape 1 Monitor Switch (GL-9NG12)	AD
D705	VHPGL-9NG12-1	Indicator, Tape 2 Monitor Switch (GL-9NG12)	AD
D706	VHPGL-9NG12-1	Indicator, 2 ▶ 1 Tape Dubbing Switch (GL-9NG12)	AD
D707	VHPGL-9NG12-1	Indicator, 1 ▶ 2 Tape Dubbing Switch (GL-9NG12)	AD
D708	VHPGL-9NG12-1	Indicator, Mono Switch (GL-9NG12)	AD
D709	VHPGL-9NG12-1	Indicator, 15kHz Filter Switch (GL-9NG12)	AD
D710	VHPGL-9NG12-1	Indicator, 8kHz Filter Switch (GL-9NG12)	AD
D711	VHPGL-9NG12-1	Indicator, 30Hz Filter Switch (GL-9NG12)	AD
D712	VHPGL-9NG12-1	Indicator, 15Hz Filter Switch (GL-9NG12)	AD
D713	VHPGL-9NG12-1	Indicator, "b" Speakers Switch (GL-9NG12)	AD
D714	VHPGL-9NG12-1	Indicator, "a" Speakers Switch (GL-9NG12)	AD
D901	VHPGL-52RG/1F	Indicator, Power/Protection (GL-52RG)	AK
		POSITIVE TEMPERATURE COEFFICIENT THERMISTORS	
PTH401, PTH402	RH-QX1001AFZZ	Temperature Detection	AF
		COILS	
L301, L302	RCILZ0067AFZZ	1.2μH, Oscillation Prevention	AD

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
		TRANSFORMER	
T901	RTRNP0597AFZZ	Power	BP
		CONTROLS	
VR201 (A, B)	RVR-G0053AFZZ	100K (1Z/2Z) ohm, Balance	AK
VR202 (A, B)	RVR-B0192AFZZ	100K (B) ohm, Volume	AM
VR203 (A, B)	RVR-C0075AFZZ	100K (C) ohm, Bass	AK
VR204 (A, B)	RVR-C0075AFZZ	100K (C) ohm, Treble	AK
VR301, VR302	RVR-M0057AGZZ	22K (B) ohm, Offset Voltage Adjust	AE
VR601, VR602	RVR-M0142AFZZ	2.2K (B) ohm, Output Power Indicator Sensitivity Adjust	AD
		ELECTROLYTIC CAPACITORS	
C111, C112	RC-EZ1011AFZZ	330MFD, 6.3V, +50 —10%	AC
C205, C206	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C225, C226	VCEALU1HW105M	1MFD, 50V, ±20%	AD
C227, C228	VCEALU1HW474M	.47MFD, 50V, ±20%	AB
C303	RC-EZ1040AFZZ	47MFD, 63V, +50 —10%	AD
C304	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C307	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C308	RC-EZ1040AFZZ	47MFD, 63V, +50 —10%	AD
C311	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C312, C313	RC-EZ1040AFZZ	47MFD, 63V, +50 —10%	AD
C314	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C402, C403	VCEAAU1CW106Y	10MFD, 16V, +50 —10%	AB
C404, C405	RC-EZ1011AFZZ	330MFD, 6.3V, +50 —10%	AC
C406	RC-EZ1007AFZZ	100MFD, 10V, +50 —10%	AC
C501, C502	RC-EZ1040AFZZ	47MFD, 63V, +50 —10%	AD
C503, C504	RC-EZ1038AFZZ	47MFD, 16V, +50 —10%	AB
C509, C510	RC-EZ1012AFZZ	47MFD, 50V, +50 —10%	AC
C511	RC-EZ1010AFZZ	33MFD, 25V, +50 —10%	AB
C512	RC-EZS477AF1H	470MFD, 50V, ±20%	AE
C513, C514	RC-EZ1040AFZZ	47MFD, 63V, +50 —10%	AD
C515	VCEAAU1HW335Y	3.3MFD, 50V, +50 —10%	AB
C601, C602	VCEAAU1HW335Y	3.3MFD, 50V, +50 —10%	AB
C603, C604	VCEAAU1EW106Y	10MFD, 25V, +50 —10%	AB
C905, C906	RC-EZ1093AFZZ	6800MFD, 55V, ±20%	AT
C907, C908	RC-EZ1099AFZZ	6800MFD, 55V, ±20%	AR

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
		CAPACITORS	
C101, C102	VCMZYU1HC221J	220PF, 50V, ±5%, Mica	**
C103, C104, C105, C106	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C107, C108	VCQSMU1HS561J	560PF, 50V, ±5%, Polystyrene Film	AB
C109, C110	VCMZYU1HC330J	33PF, 50V, ±5%, Mica	**
C113, C114	VCFYSU2AB475K	4.7MFD, 100V, ±10%, Metallized Film	**
C115, C116	VCMZYU1HC101J	100PF, 50V, ±5%, Mica	**
C117, C118	VCQSMA1HL273G	27000PF, 50V, ±2%, Polystyrene Film	AD
C119, C120	VCMZYU1HC221J	220PF, 50V, ±5%, Mica	**
C121, C122	VCQSMA1HL752G	7500PF, 50V, ±2%, Polystyrene Film	AC
C201, C202	VCQSMU1HS561J	560PF, 50V, ±5%, Polystyrene Film	AB
C203, C204	VCQYSH1HM563J	.056MFD, 50V, ±5%, Mylar	AC
C207, C208	VCMZYU1HC150J	15PF, 50V, ±5%, Mica	**
C209, C210	VCMZYU1HC150J	15PF, 50V, ±5%, Mica	**
C211, C212	VCFYSU2AB475K	4.7MFD, 100V, ±10%, Metallized Film	**
C213, C214	VCQSMU1HS331J	330PF, 50V, ±5%, Polystyrene Film	AC
C215, C216	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AC
C217, C218	VCQYKU1HM124J	.12MFD, 50V, ±5%, Mylar	AE
C219, C220	VCQYKU1HM224K	.22MFD, 50V, ±10%, Mylar	AE
C221, C222	VCQYKU1HM222J	.0022MFD, 50V, ±5%, Mylar	AB
C223, C224	VCQYKU1HM103J	.01MFD, 50V, ±5%, Mylar	AB
C229, C230	VCQYKU1HM223J	.022MFD, 50V, ±5%, Mylar	AC
C231, C232	VCQYKU1HM123J	.012MFD, 50V, ±5%, Mylar	AC
C291, C292	VCMZYU1HC221J	220PF, 50V, ±5%, Mica	**
C301, C302	VCMZYU1HC151J	150PF, 50V, ±5%, Mica	**
C305, C306	VCFYSU2AB154K	.15MFD, 100V, ±10%, Metallized Film	**
C309, C310	VCFYSU2AB154K	.15MFD, 100V, ±10%, Metallized Film	**
C315, C316	VCMZYU1HC150J	15PF, 50V, ±5%, Mica	**
C317, C318	VCQYKU1HM473K	.047MFD, 50V, ±10%, Mylar	AC
C319, C320	VCMZYU1HC150J	15PF, 50V, ±5%, Mica	**
C351, C352	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AB

REF. NO.	PART NO.	DESCRIPTION	CODE
C407	VCKZPU1HF223Z	.022MFD, 50V, +80 −20%, Ceramic	AA
C505, C506	VCMZYU1HC470J	47PF, 50V, ±5%, Mica	**
C507, C508	VCFYSU2AB105K	1MFD, 100V, ±10%, Metallized Film	**
C901, C902, C903, C904	VCFYSU2JB103M	.01MFD, 630V, ±20%, Metallized Film	**
C909	RC-HZ064CAFZZ	.047MFD, 250VAC, ±20%, Metallized Paper	AG
C910, C911	VCKZPU1HF223Z	.022MFD, 50V, +80 −20%, Ceramic	AA
		RESISTORS	
		(Unless otherwise specified resistors are 1/4W, ±5%, Carbon Type.)	
R101, R102	VRD-ST2HD221J	220 ohm, 1/2W, ±5%, Carbon	AA
R103, R104	VRD-ST2HD473J	47K ohm, 1/2W, ±5%, Carbon	AA
R105, R106	VRD-ST2EE221J	220 ohm	AA
R107, R108	VRD-ST2HD221J	220 ohm, 1/2W, ±5%, Carbon	AA
R109, R110, R111, R112	VRG-ST2EA220J	22 ohm, 1/4W, ±5%, Fusible	AB
R113, R114	VRD-ST2HD221J	220 ohm, 1/2W, ±5%, Carbon	AA
R115, R116	VRD-ST2EE224J	220K ohm	AA
R117, R118	VRD-ST2HD102J	1K ohm, 1/2W, ±5%, Carbon	AA
R119, R120	VRD-ST2HE184G	180K ohm, 1/2W, ±2%, Carbon	**
R121, R122	VRD-ST2HE334G	330K ohm, 1/2W, ±2%, Carbon	**
R123, R124	VRD-ST2HE103G	10K ohm, 1/2W, ±2%, Carbon	**
R125, R126	VRD-ST2HE394G	390K ohm, 1/2W, ±2%, Carbon	**
R127, R128	VRD-ST2EE100J	10 ohm	AA
R201, R202, R203, R204, R205, R206	VRD-ST2EE221J	220 ohm	AA
R207, R208	VRD-ST2EE105J	1 Meg ohm	AA
R209, R210, R211, R212	VRD-ST2EE221J	220 ohm	AA
R213, R214	VRD-ST2EE105J	1 Meg ohm	AA
R215, R216	VRD-ST2EE221J	220 ohm	AA
R217, R218	VRD-ST2EE104J	100K ohm	AA

**: Price will be quoted upon receipt of order.

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R219, R220	VRD-ST2EE394J	390K ohm	AA
R221, R222	VRD-ST2EE332J	3.3K ohm	AA
R223, R224	VRD-ST2EE682J	6.8K ohm	AA
R225, R226	VRD-ST2EE563J	56K ohm	AA
R227, R228	VRD-ST2EE273J	27K ohm	AA
R229, R230	VRD-ST2EE155J	1.5 Meg ohm	AA
R231, R232	VRD-ST2EE221J	220 ohm	AA
R233, R234	VRD-ST2EE224J	220K ohm	AA
R235, R236, R237, R238, R239, R240	VRD-ST2EE153J	15K ohm	AA
R241, R242	VRD-ST2EE564J	560K ohm	AA
R243, R244	VRD-ST2EE182J	1.8K ohm	AA
R245, R246	VRD-ST2EE562J	5.6K ohm	AA
R247, R248	VRD-ST2EE331J	330 ohm	AA
R249, R250	VRD-ST2EE224J	220K ohm	AA
R251, R252	VRD-ST2EE181J	180 ohm	AA
R253, R254	VRD-ST2EE334J	330K ohm	AA
R255, R256	VRD-ST2EE183J	18K ohm	AA
R257, R258, R259, R260	VRD-ST2EE332J	3.3K ohm	AA
R261, R262	VRD-ST2EE122J	1.2K ohm	AA
R263, R264	VRD-ST2EE562J	5.6K ohm	AA
R265, R266	VRD-ST2EE820J	82 ohm	AA
R267, R268	VRD-ST2EE102J	1K ohm	AA
R269, R270, R271, R272	VRD-ST2EE155J	1.5 Meg ohm	AA
R291, R292	VRD-ST2EE103J	10K ohm	AA
R303, R304	VRD-ST2EE102J	1K ohm	AA
R305, R306	VRD-ST2EE103J	10K ohm	AA
R307, R308	VRD-ST2EE681J	680 ohm	AA
R309, R310	VRD-ST2EE103J	10K ohm	AA
R311	VRD-ST2EE681J	680 ohm	AA
R312	VRD-ST2EE681J	680 ohm	AA
R313, R314	VRD-ST2EE103J	10K ohm	AA
R315, R316, R317, R318	VRD-ST2EE562J	5.6K ohm	AA
R319, R320, R321, R322, R323, R324, R325, R326	VRD-ST2EE122J	1.2K ohm	AA
R327, R328	VRD-ST2EE472J	4.7K ohm	AA
R329, R330	VRD-ST2EE564J	560K ohm	AA
R331, R332	VRD-ST2EE472J	4.7K ohm	AA
R333, R334	VRD-ST2EE471J	470 ohm	AA
R335, R336	VRD-ST2EE103J	10K ohm	AA
R337, R338, R339, R340	VRG-MU2EB101J	100 ohm, 1/4W, ±5%, Fusible	AD
R341, R342	VRD-ST2EE123J	12K ohm	AA
R343, R344	VRD-ST2EE392J	3.9K ohm	AA
R345, R346	RR-FZ1002AFZZ	.33 ohm, 5W, ±10%, Metal Plate (RGC55)	AD
R347, R348	VRG-ST2HA100J	10 ohm, 1/2W, ±5%, Fusible	AB
R349, R350	VRS-PT3DB2R2K	2.2 ohm, 2W, ±10%, Metal Oxide Film	AB
R351, R352	VRG-MU2EB470J	47 ohm, 1/4W, ±5%, Fusible	AD
R371, R372	VRG-ST2EA100J	10 ohm, 1/4W, ±5%, Fusible	AB
R402	VRD-ST2EE273J	27K ohm	AA
R403	VRD-ST2EE153J	15K ohm	AA
R404	VRD-ST2EE332J	3.3K ohm	AA
R405	VRD-ST2EE392J	3.9K ohm	AA
R406	VRD-ST2EE393J	39K ohm	AA
R407, R408	VRD-ST2EE682J	6.8K ohm	AA
R409	VRD-ST2EE333J	33K ohm	AA
R410	VRD-ST2EE104J	100K ohm	AA
R411	VRD-ST2EE122J	1.2K ohm	AA
R412	VRD-ST2EE470J	47 ohm	AA
R413	VRD-ST2EE183J	18K ohm	AA
R414	VRD-ST2EE221J	220 ohm	AA
R415	VRD-ST2EE103J	10K ohm	AA
R416	VRD-ST2EE392J	3.9K ohm	AA
R501, R502	VRG-ST2EA100J	10 ohm, 1/4W, ±5%, Fusible	AB
R503, R504	VRD-ST2EE183J	18K ohm	AA
R505, R506	VRD-ST2EE273J	27K ohm	AA
R507	VRD-ST2EE123J	12K ohm	AA

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R508	VRD-ST2EE123J	12K ohm	AA
R509	VRD-ST2EE273J	27K ohm	AA
R510	VRG-ST2EA220J	22 ohm, 1/4W, ±5%, Fusible	AB
R511	VRD-ST2EE153J	15K ohm	AA
R512, R513	VRD-ST2EE681J	680 ohm	AA
R514	VRG-ST2HA4R7J	4.7 ohm, 1/2W, ±5%, Fusible	AB
R515, R516	VRG-ST2EA471J	470 ohm, 1/4W, ±5%, Fusible	AB
R517	VRG-ST2EA100J	10 ohm, 1/4W, ±5%, Fusible	AB
R518	VRD-SU2EE330J	33 ohm	AA
R519	VRG-ST2EA220J	22 ohm, 1/4W, ±5%, Fusible	AB
R601, R602	VRD-ST2EE122J	1.2K ohm	AA
R603, R604	VRD-ST2EE102J	1K ohm	AA
R605, R606	VRD-ST2EE270J	27 ohm	AA
R607, R608	VRD-ST2EE563J	56K ohm	AA
R701, R702, R703, R704	VRD-ST2EE121J	120 ohm	AA
R901, R902	VRS-PT3DB271K	270 ohm, 2W, ±10%, Metal Oxide Film	AB

MISCELLANEOUS

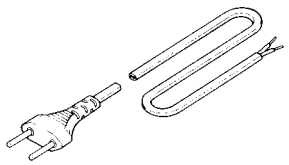
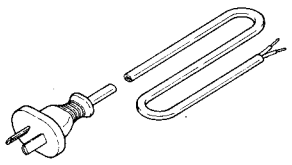
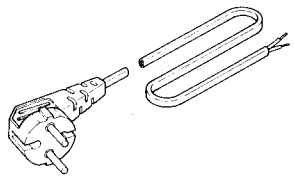
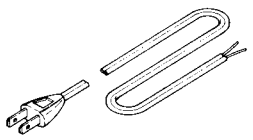
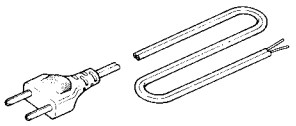
1	GCAB-3068AFSA	Cabinet	AX
2	GFTAU3080AFZZ	Lid, Bottom	AK
3	GLEGP0065AF00	Leg, Outer	AA
4	GLEGP0066AF00	Leg, Inner	AA
5	HDECA0310AFSA	Bracket, L.E.D. (Light Emitting Diode)	AK
6	HPNLC3368AFSA	Panel, Front (SM-7100H)	AZ
	GMADZ0051AFZZ	Window	AK
	PSPAG0066AF00	Cushion, 30mm x 5mm x 1.5mm	AB
	PSPAS0080AFSA	Spacer, Power Switch Knob (SM-7100H)	AB
	PSPAS0084AFSA	Spacer, Push Switch Knobs (SM-7100H)	AA
	HPNLC3368AFSB	Panel, Front (SM-7100HB)	AZ
	GMADZ0051AFZZ	Window	AK
	PSPAG0066AF00	Cushion, 30mm x 5mm x 1.5mm	AB
	PSPAS0080AFSB	Spacer, Power Switch Knob (SM-7100HB)	AB
	PSPAS0084AFSB	Spacer, Push Switch Knobs (SM-7100HB)	AA
7	JKNBM0297AFSA	Knob, Power On/Off Switch (SM-7100H)	AD
	JKNBM0297AFSB	Knob, Power On/Off Switch (SM-7100HB)	AD
8	JKNBM0298AFSA	Knob, Speakers Selector/Subsonic Filter/High Filter/Mono Switch/Tape Dubbing Selector/Tape Monitor Selector/Tone Control Circuit On/Off/Loudness Contour/Audio Muting (SM-7100H)	AD
	JKNBM0298AFSB	Knob, Speakers Selector/Subsonic Filter/High Filter/Mono Switch/Tape Dubbing Selector/Tape Monitor Selector/Tone Control Circuit On/Off/Loudness Contour/Audio Muting (SM-7100HB)	AD
9	JKNBN0403AFSA	Knob, Volume Control (SM-7100H)	AL
	JKNBN0403AFSB	Knob, Volume Control (SM-7100HB)	AL
10	JKNBN0404AFSA	Knob, Bass Control/Treble Control/Function Selector/Balance Control (SM-7100H)	AH
	JKNBN0404AFSB	Knob, Bass Control/Treble Control/Function Selector/Balance Control (SM-7100HB)	AH
11	LANGF0482AFZZ	Bracket, Left & Right Hand Side	AF
12	LANGG0066AF00	Lever, Power Switch	AD
13	LANGG0069AFZZ	Bracket, Printed Wiring Board	AD
14	LANGQ0649AFSA	Bracket, Terminals & Jacks (SM-7100H)	AN
	LANGQ0688AFSA	Bracket, Terminals & Jacks (SM-7100HB)	AN
15	LANGQ0650AFZZ	Bracket, Headphones Jack	AB
16	LANGQ0652AFZZ	Bracket, Power Switch	AB
17	LANGR0468AFZZ	Bracket, Front	AM
18	LANGT0781AFZZ	Bracket, Bottom	AM
19	LANGT0785AFZZ	Bracket, Center	AE
20	LBSHC0004AGZZ	Bushing, Mains Supply Cord	AC
21	LBSHC0007AFZZ	Bushing, Mains Supply Cord	AB
22	LHLDP8004AF00	Holder, Power/Protection Indicator	AC
23	LHLDS1052AF00	Guide, Power Switch Lever	AB
24	LHLDW1062AFZZ	Wire Holder	AA
25	LHLDW1068AFZZ	Nylon Band, 100mm	AA
26	LHLDW1075AFZZ	Nylon Band, 60mm	AA
27	LHLDW9002CEZZ	Wire Holder	AA
28	LHLDW9003CEZZ	Wire Holder	AA
29	LX-BZ0261AFFD	Screw, Front Panel Retaining	AA
30	LX-HZ0069AFFD	Screw, 4mm Dia. x 10mm, Transformer Retaining	**
31	LX-LZ0051AF00	Push Rivet	**
32	LX-WZ5065AGFE	Lock Washer, Fuse Holder	AB
33	MJNT-3051AFZZ	Coupling, Function Selector Shaft	AE
34	MSPRK0054AFFJ	Plate Spring, Function Selector Switch	AB
35	NSFTS0056AFZZ	Shaft, Function Selector	AC
36	PCOVW1105AFZZ	Cover, Power Switch	AE
	PCUSZ0007AFZZ	Cushion, 175mm x 9.8mm x 4.8mm	AB
	PCUSZ0008AFZZ	Cushion, 15mm x 6mm x 4mm	AB
	PFLT-0330AF00	Felt, Cabinet	AA
37	PFLT-0367AFZZ	Felt, 32mm Dia. x 4.8mm Dia. x 0.9mm	AA
	PFLT-0372AF00	Felt, 370mm x 24mm	AB
	PFLT-0373AF00	Felt, 57mm x 5mm, Output Power Indicator	AA
38	PGUMM0132AFZZ	Holder, L.E.D., Rubber	AE
39	PGUMM0139AF00	Cushion, 22mm Dia. x 15.5mm Dia. x 2.2mm, Outer Leg	AE
40	PRDAR0101AFFW	Heat Sink, Transistor (Q503 & Q504)	AB

**: Price will be quoted upon receipt of order.

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
41	PRDAR0191AF00	Heat Sink, IC301, Left Channel	AY
42	PRDAR0192AF00	Heat Sink, IC302, Right Channel	AY
43	PSPAN0054AFZZ	Spacer, Nylon	AB
44	QACCL0051AFZZ	Mains Supply Cord, For Users in Australia	AM
45	QACCS0051AF00	Mains Supply Cord	AM
46	QACCZ0002TA0F	Mains Supply Cord	AF
47	QACCZ0052AF00	Mains Supply Cord	AP
48	QACCZ0053AF00	Mains Supply Cord	AK
49	QCNW-0489AF02	Cable, 6-lead, 230mm	AG
50	QCNW-0489AF03	Cable, 6-lead, 300mm	AH
51	QCNW-0492AF01	Cable, 10-lead, 520mm	AL
F901	QFS-C402DAFNI	Fuse, T4.0A (220/240V)	AE
	QFS-C632DAFNI	Fuse, T6.3A (110V)	AE
52	QFSHP1001AGZZ	Holder, Fuse (F901)	AH
J901	QJAKJ0070AFZZ	Jack, Headphones, with Nut	AF
53	QLUGP0111CEFW	Terminal Tip, 13mm	AA
54	QLUGP9052AFZZ	Terminal Tip	AA
55	QPLGZ0153AFZZ	Connection Pin	AC
SO904	QSOCD2553AFZZ	Socket, Tape 2 Record/Play-back	AD
SW902	QSOCE0559AFZZ	Switch, Mains Voltage Selector	AK
SO905 (A~D)	QSOCJ2459AFZZ	SO905 (A, B): Jack, Outputs of Pre-amplifier	AE
		SO905 (C, D): Jack, Inputs for Power-amplifier	
SO902 (A~F)	QSOCJ2667AFZZ	SO902 (A, B): Jack, Tuner Input	AG
		SO902 (C, D): Jack, Auxiliary Input	
		SO902 (E, F): Jack, Tape 1 Input	
SO903 (A~F)	QSOCJ2667AFZZ	SO903 (A, B): Jack, Tape 1 Output	AG
		SO903 (C, D): Jack, Tape 2 Input	
		SO903 (E, F): Jack, Tape 2 Output	
SO901 (A~D)	QSOCZ2472AFZZ	SO901 (A, B): Jack, Phono 1 Input	AH
		SO901 (C, D): Jack, Phono 2 Input	
SW901	QSW-P0158AFZZ	Switch, Power	AM
SW201 (A~P)	QSW-P0200AFZZ	SW201A: Switch, Audio Muting	AZ
		SW201B: Switch, Loudness Contour	
		SW201C: Switch, Tone Control Circuit On/Off	
		SW201D: Switch, Tape 1 Monitor	
		SW201E: Switch, Source Monitor	
		SW201F: Switch, Tape 2 Monitor	
		SW201G: Switch, 2 ▶ 1 Tape Dubbing	
		SW201H: Switch, Source Dubbing	
		SW201I: Switch, 1 ▶ 2 Tape Dubbing	
		SW201J: Switch, Mono	
		SW201K: Switch, 15kHz High Filter	
		SW201L: Switch, 8kHz High Filter	
		SW201M: Switch, 30Hz Subsonic Filter	
		SW201N: Switch, 15Hz Subsonic Filter	
		SW201O: Switch, "b" Speaker	
		SW201P: Switch, "a" Speaker	
SW101 (A,B,C)	QSW-R0164AFZZ	Switch, Function Selector	AT
TE903	QTANN0153AFZZ	Terminal, Earth	AD
TE901	QTANZ0455AFZZ	Terminal, Speaker A	AG
TE902	QTANZ0455AFZZ	Terminal, Speaker B	AG
RLY401	RRLYZ0056AFZZ	Relay, Protection	AS
	SPAKA0567AFZZ	Cushion, Packing, Left Hand Side	AF
	SPAKA0568AFZZ	Cushion, Packing, Right Hand Side	AF
	SPAKC1280AFZZ	Individual Carton (SM-7100H)	**
	SPAKC1330AFZZ	Individual Carton (SM-7100HB)	AL
	SPAKX0226AFZZ	Cushion, Packing, Bottom	AC
	SPAKX0228AFZZ	Cushion, Packing, Top	AE
	SSAKA0007SEZZ	Bag, Operation Manual	AA
	SSAKH0156AFZZ	Bag, Unit, 500mm x 640mm	AC
	TCAUA0200AFZZ	Caution Sheet, Fuse (6.3A), with Pouch	–
	TCAUA0201AFZZ	Caution Sheet, Fuse (4.0A), with Pouch	–
	TCAUS0052AFZZ	Caution Label, Bottom Lid	–
	TCAUS0076AFZZ	Caution Label, Cabinet	–
	TGANE1119AFZZ	Warranty Card, For Users in Australia	–
	TGANG1039AFZZ	Warranty Card, For Users in Europe	–
	TINSZ0158AFZZ	Operation Manual	AK
	TLABS0080AFZZ	Label, SEMKO	–
	TLABS0081AFZZ	Label, NEMKO	–
	TLABS0082AFZZ	Label, DEMKO	–
	TLABS0083AFZZ	Label, SEV	–
	TLSTS0001ZZR0	Service Station List, For Users in Australia	–
	TMAPC0561AFZZ	Schematic Diagram	–
	TTAGH0079AFZZ	Tag, English/German/French/Spanish/Swedish	AC
PRINTED WIRING BOARD ASSEMBLY (Not replacement item.)			
	DUNTK0030AF02	Output Power Indicator Circuit	**
	DUNTK0054AF02 (Combined assembly)	Power Amplifier	**

**: Price will be quoted upon receipt of order.

Mains supply cord	Bushing	Connection		Figure
		Ⓐ	Ⓑ	
㊺ QACCS0051AF00	LBSHC0004AGZZ	Blue	Brown	
㊹ QACCL0051AFZZ	LBSHC0007AFZZ	Blue	Brown	
㊼ QACCZ0052AF00	LBSHC0004AGZZ	Blue	Brown	
㊻ QACCZ0002TA0F	LBSHC0007AFZZ	Brown	Brown	
㊽ QACCZ0053AF00	LBSHC0007AFZZ	Black	Black	

MAINS SUPPLY CORD WIRING CONNECTIONS

TECHNISCHE INFORMATION

- Nur für die Werkstatt -

Type : SM7100H

Lfd.-Nr./ Datum : 8504011

Problem : Mehrfacher Ausfall der Endstufen IC's durch hochfrequentes Schwingen in dem betreffenden Kanal.

Abhilfe : Auf der Endstufen und Klangregel Platine befinden sich schwarze, rechteckige Kondensatoren:

Endstufen C 315/ 319 - 33pF
Klangregelung C 207/208/209/210 - 15pF

Wir bitten Sie diese gegen Keramikkondensatoren auszutauschen.

Diese Information erhielten wir von der Firma Deubel u.Höfermann.